THE JOURNAL OF
POLITICAL ECONOMY

Volume 47 DECEMBER 1939 *Number 6*

CROSS-SECTION STUDIES IN THE COBB-DOUGLAS FUNCTION

M. BRONFENBRENNER
Central Y.M.C.A. College, Chicago

PAUL H. DOUGLAS
University of Chicago

THE PROBLEM AND ITS HISTORY

THE Cobb-Douglas function was applied in 1927–28 to the statistical verification of the marginal productivity theory of distribution. Its mathematical statement is

$$P = bL^kC^{1-k}.$$

In this formula P represents total value product of industry, deflated for price changes, L total labor employed in production, and C total fixed capital available for production. The constants b and k are obtained by the method of least squares.[1] If the fit of this function were good, and the theory of marginal productivity borne out by the results, the percentage share of labor in total product would approximate $(L\partial P/\partial L)/P$, or k.

Several published studies have yielded apparently good fits of

[1] A somewhat freer form can also be fitted, in which

$$P = bL^kC^j.$$

Here j and k are determined independently, and their sum need not equal unity.

this function, as well as results apparently consistent with accepted economic theory. Using American and Australian data, investigators have obtained values of k (.65–.75) which approximate the actual share of labor in total product in the various regions, and which are fairly constant from region to region.[2]

In each of these studies the observations used in fitting the function were of total product, total labor, and total fixed capital in the region at different points in time. All three variables had upward trends in the period studied (late nineteenth and early twentieth centuries). It has been suggested frequently, in consequence, that the results demonstrate the effects of time, not productivity.

To test the pertinence of this criticism, as well as other criticisms,[3] the writers undertook the "cross-section" study of the Cobb-Douglas function, using as data figures for different industries and localities at a given point in time.[4] The results of this cross-section study ($k = 0.74$ and $k = 0.75$ for all American industry) check surprisingly closely with the results ($k = 0.75$) of previous temporal studies. It is apparent that the results of neither temporal nor cross-section studies can be due to the operation of the time factor alone.

THE DATA AND THEIR ADJUSTMENTS

Detailed statistical information as to product, labor, and capital in various industries (or localities) at a given period of time is not readily obtainable. In the United States, post-war censuses of manufactures include no capital figures. Accordingly pre-war American data were used, despite inapplicability to present conditions. The last pre-war census (1914) was also unsuitable; 1914

[2] The first such study was by C. W. Cobb and P. H. Douglas, "A Theory of Production," *American Economic Review Supplement*, XVIII (1928). Later studies include P. H. Douglas, *The Theory of Wages* (New York, 1934), chaps. v–ix; and M. L. Handsaker and P. H. Douglas, "The Theory of Marginal Productivity Tested by Data for Manufacturing in Victoria," *Quarterly Journal of Economics*, Vol. LII (1937–38). Further confirmations, thus far unpublished, have been reported from other laboratories.

[3] See below, section entitled "Major Criticisms."

[4] The desirability of such a study was pointed out by one of the authors (Douglas) as early as 1934. See Douglas, *op. cit.*, p. 203.

being a year of depression, book values of capital assets tended to be above market values. The preceding census (1909) was taken in a year of moderate prosperity.[5] Its data were therefore used in our computations.

The 1909 census includes figures on (1) average number of employees, (2) value of capital available, and (3) value added by manufacture (value of products less cost of materials and fuel) for several hundred industries, and for the forty-nine states (including the District of Columbia and territories later admitted as states).[6] The data could not be used as taken directly from the census. Various adjustments were required, which are listed in the following paragraphs.

Labor figures used were the sum of census figures on (1) wage-earners (average number) and (2) salaried employees, including corporation officials but not proprietors or firm members.

Two sets of capital figures were carried throughout. The capital figures of the census gave the best available approximation to "total capital." These are not strictly comparable with the capital figures of previous studies, for these latter excluded land, cash balances, and inventories. To continue along this latter line, a "fixed capital" series derived from the "total capital" series was used concurrently. Figures on "total capital" for each industry and locality were multiplied by the percentage of capital value representing buildings, machinery, tools, and equipment in 1904.[7] Land and working capital were thus omitted.

The product figures required the greatest readjustment, and certain of the readjustments were themselves in the nature of estimates. The census estimate of total value added by man-

[5] In the temporal studies on the Cobb-Douglas function, the year 1909 was one in which the observed and computed values of P were equal (see Douglas, *op. cit.*, Table 14, p. 134).

[6] Attention was confined to 90 principal industries, of which 22 were "composites" built up by summation of separate census entries. These industries, and the relevant data pertaining to them, are listed in Table 4.

[7] The 1909 *Census of Manufactures* does not break down the capital figures. The 1904 census did so, and percentages used with 1909 data were computed, perforce, from 1904 figures. Inaccuracies are involved, not only because capital composition may have altered somewhat, but also because the classification of industries used in 1904 occasionally differs from that of 1909.

ufacturing in 1909 is considerably higher than the National Bureau of Economic Research's figure on net value product of manufacturing industry in the same year. Our several adjustments of the census data, made independently, eliminate approximately 97 per cent of this discrepancy.[8]

Several relatively small deductions were required in order to eliminate sums distributed between labor and capital by industries and in localities other than those to which the figures on value added had reference. Thus taxes, contract work, and "other expenses" as given by the census were deducted from the corresponding census figures on value added.

Deduction for depreciation on capital was more important quantitatively and likewise less accurate statistically. To obtain depreciation rates, a preliminary report by the United States Bureau of Internal Revenue, entitled *Depreciation Studies*, was used, though its publication date (1931) limits its applicability to 1909 data. An unweighted average length of life for all types of buildings was computed from figures in this report. The reciprocal of this average, to the nearest 0.25 per cent, represented the over-all depreciation rate on buildings. Similarly, an unweighted average length of life was computed for machinery and equipment in each of the several groups of industries for which the Internal Revenue authorities had compiled figures. An unweighted average of the results was in turn applied as an over-all average length of life to other industries and to localities. The reciprocals of these average lengths of life, to the nearest 0.25 per cent, were taken as depreciation rates on machinery and equipment for particular industries and for industry in general.[9] With the aid of the 1904 data on capital composition, depreciation rates and depreciation deductions were computed on both the fixed and the

[8] The census estimate of value added (*Thirteenth Census of the United States*, VIII, 129–32, 546 f.) is $8,529,261,000. The National Bureau's estimate (*Income in the United States*, Vol. II, chap. v, esp. p. 98) is only $6,107,000,000. Our suggested adjustments reduce the census figure to $6,299,009,000.

[9] The depreciation rates computed were 3.00 per cent on buildings and 6.00 per cent on machinery and equipment in industry as a whole. (Rates in specific industries ranged from 4.00 to 8.00 per cent on machinery and equipment.) The authors will furnish specific figures on request.

total capital used in any industry or locality.[10] The methods used were "rough and ready," and the results involve a considerable margin of error.

THE COMPUTATIONS[11]

Four variables in all were used in the computations. Individual computations dealt with groups of three, either x_3 or x_4 being omitted. The variables were:

x_1—log of net value added by manufacture, adjusted as indicated (P)

x_2—log of total labor employed, salaried employees as well as wage earners (L)

x_3—log of total capital available for production (C_1)

x_4—log of total fixed capital available for production, determined with the aid of 1904 data on capital composition (C_2)

The function

$$\log P = \log b + k \log L + j \log C$$

was fitted to (x_1, x_2, x_3) and (x_1, x_2, x_4) for each of the following groups and subgroups of observations.

Industries:[12] all industries, 90; highly capitalistic industries ($x_3 - x_2$ high), 23; slightly capitalistic industries ($x_3 - x_2$ low), 32; monopolistic industries (selected before computation, on the basis of the industrial history of the United States), 14; sweated trades (selected in the same way), 26; foods and beverages, 16; metals and machinery, 22.

States: all states, 49; eastern states, 9; middle-western states, 12; southern states, 17; western states, 11.

The extensive subclassification provided a basis for study of the uniformity of the function as between groups. "Monopolistic industries" and "sweated trades" were included to test the possi-

[10] In the case of industries whose "land" included deposits of exhaustible resources (e.g., cement) and of industries whose inventories included perishable commodities (e.g., canning and preserving) small deductions were applied to capital other than buildings, machinery, and equipment.

[11] The writers were aided in carrying out the computations described here and elsewhere by several student assistants, the most tolerant and persevering of whom were Miss Helen Alice Butcher and Mr. Oscar Seltzer of the University of Chicago, and Mr. John Oliver Cook, Jr., of the University of Iowa.

[12] The figures give the number of observations in each group. A single industry frequently appeared in two or three subgroups, which were not mutually exclusive.

bility of the Cobb-Douglas function "proving too much." For if the computed share $(L\partial P/\partial L)/P$ in these groups had been less than or even equal to the share actually received by labor, there would have been grounds for such suspicion.

Actual computations were carried out by using zero-order coefficients of correlation as bases for determinantal solutions in three dimensions, with deviations measured in the x_1-direction, regression coefficients and their standard errors were computed, together with coefficients of multiple correlation and the standard errors of the sums of the regression coefficients.[13]

In the Cobb-Douglas function proper, $j + k = 1$. To bind j in this manner does not require a complete recomputation, once the fit outlined above is completed. A few simple adjustments, given below in a footnote, were developed in the course of this study to simplify the binding process.[14]

[13] The formulas used are given immediately below, in the notation of Professor Henry Schultz (*Theory and Measurement of Demand* [Chicago: University of Chicago Press, 1938], Appen. C). In this notation n is the number of observations and k the number of statistically fitted parameters. The constant term a is our log b, $b_{12.3}$ is our k, and $b_{13.2}$ is our j.

$$\Delta = \begin{vmatrix} 1 & r_{12} & r_{13} \\ r_{12} & 1 & r_{23} \\ r_{13} & r_{23} & 1 \end{vmatrix}$$

$$R^2_{1.23} = 1 - \frac{\Delta}{\Delta_{11}} \qquad b_{1i.j} = \frac{s_1}{s_i}\frac{\Delta_{1i}}{\Delta_{11}} \qquad \epsilon_1^2 = \frac{n}{n-k}\frac{\Delta}{\Delta_{11}}$$

$$s_a^2 = \frac{\epsilon_1^2}{n} \qquad s^2_{b1i.j} = \frac{s_a^2}{s_i^2}\frac{\Delta_{11}ii}{\Delta_{11}} \qquad \rho_{b1i.j\rho 1j.i} = \frac{s_a^2}{s_i s_j}\frac{\Delta_{11}ij}{\Delta_{11}}$$

$$s^2_{\Sigma b} = s^2_{b1i.j} + s^2_{b1j.i} + 2\rho_{b1i.j\rho 1j.i} \ .$$

[14] The Cobb-Douglas function may be written in a two-variable form, thus

$$(P/C) = b(L/C)^k \text{ or } (\log P - \log C) = \log b + k\,(\log L - \log C)\,.$$

In terms of the symbols of this section this becomes

$$(x_1 - x_3) = \log b + k\,(x_2 - x_3)\,.$$

Shift the origin of this expression to its point of means. A straightforward least-squares solution then gives

$$k = \frac{\Sigma[(x_1 - x_3)(x_2 - x_3)]}{\Sigma(x_2 - x_3)^2} = \frac{r_{12}s_1s_2 + s_3^2 - r_{13}s_1s_3 - r_{23}s_2s_3}{s_2^2 + s_3^2 - 2r_{23}s_2s_3}\,,$$

$$r_{(1-3)(2-3)} = \frac{r_{12}s_1s_2 + s_3^2 - r_{13}s_1s_3 - r_{23}s_2s_3}{[(s_1^2 + s_3^2 - 2r_{13}s_1s_3)(s_2^2 + s_3^2 - 2r_{23}s_2s_3)]^{1/2}}\,.$$

Shifting back to the natural origin, we obtain

$$\log b = (M_1 - M_3) - k(M_2 - M_3)\,,$$

the M's being the arithmetic means of the x's.

THE INTERPRETATIONS

If the fitted function were homogeneous and of the first degree, and if production were carried on at constant (minimum average) cost, we should have the familiar results

$$j + k = 1 .$$

If production were carried on under increasing costs, we should expect instead

$$j + k < 1 ,$$

since n-fold multiplication of both L and C would cause less than n-fold increase in P. (The direction of this inequality would be reversed under decreasing cost conditions.) No economically significant results can be derived from the size of the constant term b, since this term is not invariant for changes in the units of measurement of the variables.[15]

The critical comparison is then that of $(j + k)$ with unity. If a significant difference ($> 3s_{j+k}$) exists, we may have evidence of production under increasing or decreasing cost conditions.

The Cobb-Douglas function was developed as a statistical test of the theory of marginal productivity. If this theory were applicable, and competition approximately pure, the share of labor in total product would equal $(L\partial P/\partial L)/P$, or k in the Cobb-

[15] When all variables are expressed as index numbers, production is carried on under increasing costs, constant costs, or decreasing costs, according as $\log b \gtrless 0$ or $b \gtrless 1$, since, under increasing costs, total product should exceed L^kC^i, due to the greater marginal productivities of earlier increments of productive resources, and vice versa under decreasing costs.

Even with all variables expressed as index numbers, there are, however, statistical and economic reasons other than increasing or decreasing costs which may tend to alter the value of b and of $\log b$:

1. If the fitted plane is only an approximation to a higher degree surface, the value of $\log b$, its $\log P$-intercept, may be of the opposite sign to the true intercept of the surface.

2. The separate productivity of management is not considered. This omission tends to raise the expected value of b.

3. Total capital figures include cash balances and inventories, held primarily to increase liquidity and not to add to product directly. Their inclusion tends to lower values for b. Any tendency on the part of firms to carry capital items on their books at inflated values, or without adequate depreciation allowances, or when the capital instruments are not actually in use, would reinforce this effect.

Douglas function. In case the observed share of labor, which we call w, were significantly different from k (different by more than $3s_k$, w not being considered subject to measurable sampling error), we should have some evidence of the invalidity of one or both of our assumptions, as applied to the industries or localities in question.

This evidence cannot be considered conclusive. Certain of the difficulties will be inferred easily from criticisms of the function which we shall discuss below. Certain others which appear pertinent are these:

1. Certain productive resources (notably management) are omitted from our computations, as not susceptible to measurement. If management does, in fact, play a role in determining product, and if it is more highly correlated with L than with C, its omission from our computations raises k in relation to j. (Vice versa, in the opposite case.)

2. Our methods of deducting for depreciation in computing P cause negative correlation between errors in measurement of C and P. Accordingly a systematic bias is introduced, tending to overstate k in relation to j.

3. Since P is measured in monetary units, our figures do not distinguish marginal value product from value of marginal physical product. Accordingly, they provide no method for detecting "monopolistic" as distinguished from "monopsonistic" exploitation.

THE PROBLEM OF STATISTICAL STABILITY

We have minimized deviations in the x_1 (log P) direction throughout. In ideal cases, when all points lie on the plane fitted, its parameters (our b, k, j) are independent of the minimization direction. When several variables, treated as independent, are highly intercorrelated, the points may actually lie on a "pencil" in space. If so, the parameters of any plane fitted to the "pencil" vary widely with even slight changes (of less than 90°) in the direction of minimization. In such a case, any plane fitted is considered unstable statistically, unless choice of one particular minimization direction can be justified. Dr. Horst Menders-

hausen has claimed in a recent article[16] that the American data of the co-author's *Theory of Wages* lead to statistically unstable fits. He has expressed doubts as to the reliability of the methods and results of that book because of the alleged instability of the parameters of the function fitted.

In justifying minimization in the x_1 (log P) direction, we may (1) devise ways and means of eliminating cases leading to extreme statistical instability, or (2) adduce statistical or economic reasons why minimization in this direction leads to particularly valid results.

1. We have disregarded results derived from data in which any of three "stability conditions" is not fulfilled:[17]

a) First stability condition: There should not be more than one zero-order correlation coefficient between any pair of variables which is above a certain maximum, say .95.

b) Second stability condition: No two independent variables should be correlated more highly with each other than is any independent variable with the dependent one.[18]

[16] "On the Significance of Professor Douglas' Production Function," *Econometrica*, VI (1938), 143–53. For a discussion of the general problem of stability, see *ibid.*, pp. 147–51, and the works of Professor Ragnar Frisch referred to in *ibid.*, n. 15. For criticism of the statistical results of *The Theory of Wages* see especially n. 17, eqs. (11)–(13) in *ibid.*

Dr. Mendershausen's eqs. (12) and (13), in which deviations are minimized in the log *L*- and log *C*-directions, lead to relative shares of labor which are absurd economically (222 and −107 per cent).

[17] Of the three tests suggested, the first two are "rules of thumb," unjustified as yet by the mathematical theory of sampling. The third is well known, though inexact for small samples.

[18] This test alone rules out most "freak" results occasionally encountered in actual computations. It rules out most $b_{12.3} > 1$, and all $b_{13.2} < 0$.

1. When the standard deviations of the variables are approximately equal

$$b_{12.3} = \frac{\Delta_{12}s_1}{\Delta_{11}s_2} = \frac{r_{12} - r_{13}r_{23}}{(1 - r_{23}^2)}.$$

For this to exceed unity, we must have

$$(r_{23} - r_{13}) > \frac{(1 - r_{12})}{r_{23}}.$$

When r_{23} is positive, the expression on the right is positive, and $r_{23} > r_{13}$.

2. The sign of $b_{13.2}$ is that of $\beta_{13.2}$, which equals $-\Delta_{12}/\Delta_{11}$.

For this sign to be negative, $\Delta_{12}(= r_{12}r_{23} - r_{13})$ must be positive, since Δ_{11} is always positive.

Therefore $(r_{23} - r_{13}/r_{12})$ is positive, and $r_{23} > r_{13}$ *a forteriori*.

c) Third stability condition: All regression coefficients must be statistically significant (all $b_{1i.j} > 3s_{b_{1i.j}}$).

2. The logical meaning of minimizing in any particular direction is the assumption that all deviations from the fitted function are due to random errors in measurement of the dependent variable or are residual deviations due to random operation of various causes not included in the formula. Errors of measurement and residuals are assumed to be confined to the dependent variable. All independent variables (such as our L and C) are assumed to be comparatively free from random deviations of both kinds.

Are these assumptions justified in our problem? The L data are substantially free from errors, save those resulting from the treatment of "labor" as homogeneous. The C data, however, have been asserted to be at least as unreliable as our P data. Therefore, minimization of deviations in the log C-direction has been held to be as justifiable a procedure as minimization in the log P-direction. Results of the two minimizations differing widely, the entire function has been considered unstable.

The presence of widespread errors in the capital figures cannot be questioned;[19] the random character of these errors is another

[19] Post-war censuses of manufactures omit data on capital altogether because of the prevalence of these errors. To quote from the 1909 census (*Thirteenth Census of the United States*, VIII, 20–22):

"The statistics of capital have been frequently referred to in the reports of previous censuses as defective and in fact almost worthless. . . . . Experience at the census of 1909 confirms the belief that the statistics are of little value. . . . .

"There is no general agreement among manufacturers, accountants, and statisticians as to the proper standard of measurement of capital investment. Even, however, if the Census Bureau should adopt a definite standard, it would be quite impossible to secure returns conforming to that standard. . . . . It is necessary to accept the figures for capital substantially as they appear on the books of the manufacturers or as estimated by them."

Several reasons for the lack of uniformity in the capital figures are also given:

1. Small firms keep no capital accounts; proprietors know only amounts originally invested.

2. Most firms make no provision for depreciation. On the other hand, provisions actually made are frequently excessive.

3. Provision for obsolescence is not made.

4. Proprietors of many establishments purchased these establishments at "going value." They enter on their books as the value of the property its cost to them,

matter. The major sources of error in the reported statements of capital value seem to be tendencies to carry capital items in accounts at book values which are above market values. Granted the existence of some random errors in the capital figures,[20] reflecting themselves in some statistical instability, the relative importance of these errors may be questioned. The total errors in C may be large, relative to the total errors in P, without a parallel relation existing between the *random* errors.

It should be remembered, also, that in the computation of the adjusted P series the major deduction made from census figures of "value added by manufacture" (themselves subject to error) was a deduction for current depreciation on capital. This item was computed as the product of crudely estimated depreciation rates and crudely estimated percentages of these same erroneous capital figures. Any errors in C were translated by this method into errors in P as well, not only in their pristine erroneousness but with added errors due to the translation process. The magnitude of the original C error was, of course, greater than the magnitude of the resulting P errors.

But what of residual deviations? Since the economic analysis underlying the relationship $P = f(L, C)$ implies causation of P by L and C, these residual deviations are of necessity confined to the P values. These deviations are caused by the actual effect upon product (P) of various causes other than quantities of labor (L) and capital (C), which may operate in practice, and it is assumed that these effects have random distribution about the "pure" effects upon P of L and C alone. Since the movement of causation is from L and C to P, and not vice versa, we would expect that such random deviations or residuals would be present in the observed P quantities, and hence would justify minimiza-

---

which need bear no relation to original cost, present physical valuation, or reproduction cost.

5. "Watered" securities may appear on books as actual capital.

6. There may be a certain amount of duplication in the figures, because deductions are not always made for current liabilities.

[20] This is particularly true in the fixed-capital figures. The census mentions wide errors in the classification of capital, but no general direction of bias (*ibid.*, p. 20).

tion in this direction, although if all the deviations were caused by errors of measurement this would not be justifiable.[21]

For the reasons cited, therefore, we hold that minimization in the P-direction is more justifiable than minimization in either the L- or C-directions. Fitting a "mutual regression" in a "compromise direction" might provide a solution still more satisfactory.[22] We feel, however, that our three tests of stability have resulted in the rejection of all fits which would have been markedly different had any reasonable "compromise direction" been adopted.[23]

[21] Expressing the argument more generally, in statistical terms:

Let ∂ be an error of measurement, and ϵ a residual deviation. Let our variables be X and Y, with the former considered as causative. We may then write, reserving the symbols X and Y for "true" values of the variables

$$(Y - \partial Y - \epsilon Y) = f(X - \partial X) .$$

We are interested primarily in selecting our parameters so as to minimize the sum of the squares of the ϵY. Therefore we should minimize

$$\Sigma[f(X - \partial X) - (Y - \partial Y)]^2 .$$

This is tantamount to minimizing in the (observed) Y-direction, if ∂X may be neglected by comparison not with ∂Y alone, but with $(\partial Y + \epsilon Y)$. (We assume ∂X independent of both ∂Y and ϵY, but the former need not hold if ∂Y is small by comparison with ϵY.)

We stand indebted to Professor Oskar Lange of the University of Chicago for aid in developing this approach to the problem of the minimization direction.

[22] This procedure would not satisfy Dr. Mendershausen. See his unfavorable comments on a study by Professor Charles W. Cobb, in which mutual regressions were actually used (Mendershausen, *op. cit.*, p. 148, n. 16).

[23] Our argument here lends itself to diagrammatical illustration:

In Figure 1 the three axes (P, L, C) represent the three possible directions of minimization, and the point O is a representative observation. In previous studies, deviations have been minimized in the P-direction exclusively. Since both the L and the C data are subject to certain errors of measurement, the correct direction of minimization is somewhere in the three-dimensional figure $AOBP$. Since the P data are less satisfactory than either the L or the C data, and also because of the direction of the residual deviations involved, we should expect the angles AOP and BOP (particularly the former) to be small (less than 45°). If a shift in the minimization direction within this shell $AOBP$ alters the parameters k and j of the Cobb-Douglas function materially, the fit is unstable. Instability within the remainder of the (P, L, C) space is irrelevant. We admit freely that it exists, even in fits satisfying all three of our stability conditions (see Table 3).

THE NUMERICAL RESULTS

Numerical results of the computations for various industries are given in Tables 1 and 2.[24] The results, when total capital figures are used, check closely both with the results of previous temporal studies in the Cobb-Douglas function and with observed distributive shares. It should be noted that the result obtained with the largest sample (all 90 industries) is identical with the results of the American time study, i.e., k or the exponent for labor is

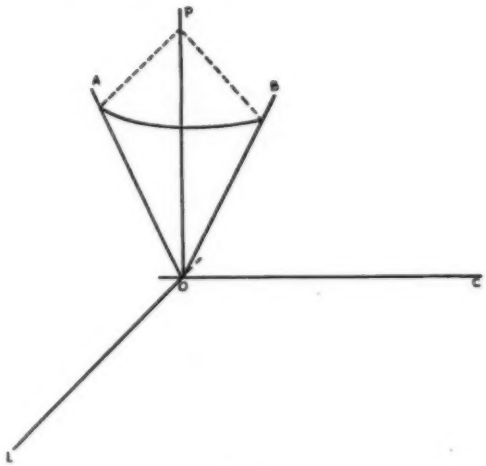

FIG. 1

0.7495, whereas in the time study for the United States it was 0.75. This agreement would certainly seem to be more than accidental and to corroborate in large degree the results of previous studies. Even when the k, j formula is used instead of k, $1 - k$, the exponent for labor is found to be 0.742. It will also be noted that the agreement is much closer when total capital is used in the cross-section studies as above than when only fixed capital is used.

Judged by the three tests for stability, the majority of planes

[24] Results for the interstate computations are not presented, owing to their extreme instability. They checked much less closely with previous results.

fitted to the data appeared unstable. Fits using total-capital statistics (x_3) gave better results than those using the fixed-capital series (x_4). This was to be expected theoretically, due to the large random errors in allocation of total capital between the categories

TABLE 1

CHARACTERISTICS OF FUNCTION: $P = bL^kC^j$ IN AMERICAN INDUSTRIES, 1909

INDUSTRIES	No.	b*	k	j	$k+j$	LABOR SHARE, w	$\frac{\log b}{1 - \log b}$	$w-k$
	A. Total-Capital Figures Used							
All†	90	0.9006 (0.0117)	0.7418 (0.0454)	0.3192 (0.0429)	1.0610 (0.0269)	0.6757 (0.0523)	− 3.889	−0.0661
Most capitalistic	23	1.2061 (0.0267)	0.7048 (0.1687)	0.2474 (0.1475)	0.9522 (0.0722)	0.6105 (0.1040)	3.049	−0.0943
Least capitalistic	32	1.1529 (0.0144)	0.7382 (0.1007)	0.2178 (0.0923)	0.9560 (0.0289)	0.7105 (0.0815)	4.292	−0.0277
Monopolistic†	14	0.3528 (0.0329)	0.6834 (0.1188)	0.3646 (0.1021)	1.0480 (0.0845)	0.6745 (0.1299)	−13.754	−0.0089
Sweated	26	1.1681 (0.0204)	0.7868 (0.1106)	0.1649 (0.0985)	0.9517 (0.0434)	0.6784 (0.0934)	3.309	−0.1084
Clothing and textiles	16	2.0436 (0.0248)	0.9779 (0.1509)	−0.0698 (0.1414)	0.9081 (0.0567)	0.6888 (0.1195)	12.516	−0.2891
Foods and beverages	12	0.3650 (0.0341)	0.7150 (0.1378)	0.3501 (0.1250)	1.0651 (0.0891)	0.5611 (0.1496)	−12.818	−0.1539
Metals and machinery†	22	1.0072 (0.0170)	0.7136 (0.0882)	0.2561 (0.0814)	0.9697 (0.0386)	0.7286 (0.0970)	0.182	0.0150
	B. Fixed-Capital Figures Used							
All	90	1.6982 (0.0135)	0.8568 (0.0451)	0.0835 (0.0347)	0.9403 (0.0307)	0.6757 (0.0523)	17.037	−0.1811
Most capitalistic	23	3.8811 (0.0279)	0.9228 (0.1284)	−0.0384 (0.0919)	0.8849 (0.0764)	0.6105 (0.1040)	21.140	−0.3103
Least capitalistic	32	1.1041 (0.0157)	0.9467 (0.0661)	0.0192 (0.0574)	0.9659 (0.0315)	0.7105 (0.0815)	2.739	−0.2362
Monopolistic†	14	0.2855 (0.0362)	0.8062 (0.1046)	0.2989 (0.0734)	1.1051 (0.0401)	0.6745 (0.1299)	−15.039	−0.1317
Sweated	26	1.0255 (0.0214)	1.0113 (0.0849)	−0.0471 (0.0628)	0.9642 (0.0462)	0.6784 (0.0934)	− 1.963	−0.3329
Clothing and textiles	16	1.4777 (0.0187)	1.0857 (0.0690)	−0.1667 (0.0510)	0.9190 (0.0429)	0.6888 (0.1195)	9.070	−0.3982
Foods and beverages	12	0.7253 (0.0394)	0.7943 (0.1531)	0.2414 (0.1271)	1.0357 (0.1015)	0.5611 (0.1496)	− 3.541	−0.2332
Metals and machinery†	22	1.6600 (0.0170)	0.7050 (0.0896)	0.2419 (0.0761)	0.9469 (0.0384)	0.7286 (0.0970)	12.947	0.0236

* Figures in parentheses are standard errors of log b, not of b itself. Other figures in parentheses are standard errors of quantities in column captions.

† This regression, in three variables, satisfies all suggested tests for stability.

of fixed and working capital. The fits for industries are much more stable than those for states, the latter involving very high intercorrelations.

The most unstable fits, however, are precisely those yielding nonsense parameters in the Cobb-Douglas function. Every case

TABLE 2

CHARACTERISTICS OF FUNCTION: $P = bL^kC^{1-k}$ IN AMERICAN INDUSTRIES, 1909

INDUSTRIES	No.	b*	k	LABOR SHARE, w	$\frac{\log b}{2 \log b}$	$w - k$	$r_{\log\left(\frac{P}{C}\right)\log\left(\frac{L}{C}\right)}$
		A. Total-Capital Figures Used					
All†	90	0.7128 (0.0120)	0.7495 (0.0409)	0.6757 (0.0523)	−12.225	−0.0738	0.8921
Most capitalistic	23	0.7847 (0.0273)	0.7908 (0.1508)	0.6105 (0.1040)	− 3.857	−0.1803	0.7692
Least capitalistic	32	0.7162 (0.0154)	0.8023 (0.0477)	0.7105 (0.0815)	− 9.416	−0.0918	0.8407
Monopolistic†	14	0.6743 (0.0345)	0.7175 (0.1050)	0.6745 (0.1299)	− 4.959	−0.0430	0.9076
Sweated	26	0.6922 (0.0214)	0.8441 (0.1032)	0.6784 (0.0934)	− 7.467	−0.1557	0.8675
Clothing and textiles	16	0.7378 (0.0285)	1.0650 (0.1622)	0.6888 (0.1195)	− 4.716	−0.3762	0.8844
Foods and beverages	12	0.7300 (0.0390)	0.6688 (0.1397)	0.5611 (0.1496)	− 3.369	−0.1077	0.8610
Metals and machinery†	22	0.7253 (0.0179)	0.7418 (0.0855)	0.7286 (0.0970)	− 7.793	−0.0132	0.8983
		B. Fixed-Capital Figures Used					
All†	90	0.8974 (0.0139)	0.9136 (0.0356)	0.6757 (0.0523)	− 3.381	−0.2379	0.9404
Most capitalistic	23	1.1521 (0.0287)	1.0210 (0.0934)	0.6105 (0.1040)	2.143	−0.4105	0.9289
Least capitalistic	32	0.7602 (0.0164)	0.9816 (0.0598)	0.7105 (0.0815)	− 7.262	−0.2711	0.9518
Monopolistic†	14	0.9647 (0.0381)	0.8462 (0.0750)	0.6745 (0.1299)	− 0.409	−0.1717	0.9630
Sweated	26	0.6878 (0.0221)	1.0565 (0.0639)	0.6784 (0.0934)	− 7.353	−0.3781	0.9621
Clothing and textiles	16	0.5957 (0.0222)	1.1735 (0.0604)	0.6888 (0.1195)	−18.198	−0.4847	0.9845
Foods and beverages	12	1.0460 (0.0421)	0.7634 (0.1349)	0.5611 (0.1496)	0.463	−0.2023	0.8945
Metals and machinery†	22	0.9365 (0.0184)	0.7709 (0.0816)	0.7286 (0.0970)	− 1.549	−0.0423	0.9123

* Figures in parentheses are standard errors of $\log b$, not of b itself. Other figures in parentheses are standard errors of quantities in column captions.

† This regression, in three variables, satisfies all suggested tests for stability.

of abnormally high k (above 0.85) and every case of abnormally low j (below 0.15) is a case of unstable fit. Every case in which the sum of the regression coefficients k and j differs widely from unity (falls outside the range 0.95–1.11) is a case of unstable fit. The converse does not follow, however. Several sets of results in numerical conformity with previous findings appear unstable statistically.

High standard errors of parameters, even where the fits appear statistically stable, make impossible conclusive statements as to the economic meaning of the results. They must be regarded as discouraging features, together with the marked tendency toward instability and the correlation of errors in C and P.

Did increasing returns prevail in American industry in 1909? Apparently so, if one considers industry as a whole (using total-capital figures $k + j = 1.06 \pm 0.03$). Apparently not, if one considers two of the subgroups in which one would expect increasing returns to be most in evidence a priori. (Highly capitalized industries: $k + j = 0.95 \pm 0.07$; metals and machinery: $k + j = 0.97 \pm 0.04$; on the other hand, in monopolistic industries, $k + j = 1.05 \pm 0.08$.)

Was American labor exploited in the manufacturing industries in 1909? In general, its relative share is somewhat less than it would have been under pure competition, assuming the Cobb-Douglas function k to be an accurate estimate of its share under competitive conditions. The difference is as large as 17 per cent in one statistically stable case. Never is the difference sufficiently large to furnish clear statistical evidence of exploitation, particularly in view of the various biasing factors tending to lead to overestimate of k.[25] It is less the persistence of negative values of $(w - k)$ than the presence of particularly large negative values in such subgroups as sweated trades, clothing and textiles, and foods and beverages which leads us to the highly tentative conclusion that our figures show some evidence of monopsonistic exploitation of American manufacturing labor in 1909.

Are the parameters of the Cobb-Douglas function (k and j) uniform as between the various subgroups? Quite clearly not.

[25] See above, pp. 767–68.

There was no reason to expect that they should be—in fact, quite the reverse, for the observed relative share of labor varied widely from group to group. (Its highest value, 0.73 in metals and machinery; its lowest, 0.56 in foods and beverages.)[26] The differences between the values of k and j as we pass from group to group are not great enough, however, in comparison with their standard errors, to lead to the positive conclusion that the function is not uniform.[27]

MAJOR CRITICISMS

Numerous unfavorable comments have been made, several in published articles, which if substantiated would minimize the economic significance of the Cobb-Douglas function and of results derived from it.[28] Many of the criticisms pertain to recognized inaccuracies in the data available. Others, more profound, may be classified under four main heads:

1. The Cobb-Douglas function is alleged not to be a production function of the type ordinarily discussed in economic theory, for (*a*) it applies to a group of industries, not to individual firms, and (*b*) it is expressed in terms of undifferentiated labor and capital, instead of the specific productive resources actually employed, including management. Moreover (*c*) "labor" and "capital" are not on the same footing. The first is measured by quan-

[26] It was never claimed that the Cobb-Douglas function was uniform for all times and places. On p. 203 of *The Theory of Wages* the co-author has stated (in boldface type) that "The Equation of Production Need Not Be the Same for All Periods and Economies."

[27] Professor David Durand has split the temporal data for the United States into three-year subgroups, fitted these separately, and obtained values of k ranging from −0.58 (1909–12) to 1.51 (1915–18). "Some Thoughts on Marginal Productivity, with Special Reference to Professor Douglas' Analysis," *Journal of Political Economy*, XLV (1937), 757, Table 2. The standard errors of these k's are indeterminate, however, since Durand fitted a three-parameter formula to groups of three observations, reducing the number of degrees of freedom to zero.

[28] The essays of Durand and Mendershausen, already mentioned, include the most far-reaching criticisms made in recent years. The most important individual items in the body of literature which followed the publication of the original paper by Cobb and Douglas appear to be the essays by J. M. Clark, "Inductive Evidence on Marginal Productivity," *American Economic Review*, Vol. XVIII (1928); Sumner Slichter, "Economic and Social Aspects of Increased Productive Efficiency," *American Economic Review*, Vol. XVIII; and Henry Schultz, "Marginal Productivity and the General Pricing Process," *Journal of Political Economy*, Vol. XXXVII (1929).

tity used in production, the latter by quantity available for production.[29]

2. The Cobb-Douglas function cannot be statistically fitted in the three dimensions, P, L, and C. First: (a) the data on which fits are based are neither as accurate nor as pertinent as might be desired. Second, (b) the fitting of the function to index numbers of P, L, and C, instead of to actual values, gives the fits a spurious accuracy. Third, (c) the Cobb-Douglas function as actually fitted is only in two dimensions (P/C and L/C), not in three. And, finally, (d) when attempts are made to fit in three dimensions, the parameters of the plane obtained vary widely with the direction of minimization of the deviations.

3. The form of the Cobb-Douglas function assumes certain conditions whose validity is yet to be proved in existing enterprise economies. (a) It is homogeneous and of the first degree.[30] (b) From it can be derived a unit elasticity of substitution, meaning constant relative shares for the factors of production.

4. Whatever relations actually exist between P, L, and C are due to the operation of time (meaning population growth and technical improvements, not the calendar per se). Since P, L, and C all tended to increase with time in the United States and Australia during the period studied in the temporal surveys, their trends were spuriously correlated. The Cobb-Douglas function would appear a resultant of three time-series, and not a production function at all.[31]

[29] This particular "objection" is really a hewer of wood and a drawer of water for the function. For in years of prosperity, book values of C should tend to be understatements, and therefore values of P derived therefrom should be low in comparison with observed values—and vice versa in years of depression and partial unemployment of capital. These expected divergences have been found when the function was fitted over time (Douglas, *op. cit.*, pp. 134–40).

[30] If all firms' production functions were of this type, no set of equilibrium outputs and prices could be reached under atomistic competition. This point has been applied in criticism of the Cobb-Douglas function by Durand, *op. cit.*, p. 749.

[31] For a mathematical statement of this line of argument cf. Mendershausen, *op. cit.*, p. 153. His equations (17–23) may be interpreted as giving precise meaning to the phrase "resultant of three time series."

The argument assumes that the three trends are related by purely technical considerations if at all. Otherwise the economic interrelationship may take the form of

REPLY TO CRITICISMS

So far as criticisms 1(*a*) and 1(*l*) are concerned, we admit that they are true. But we do not see why the phrase "production function" cannot be applied as a normative term to all industry or to certain specific industries, nor why it must be confined to a single plant. To insist upon using different types of labor and capital is for the present nonoperational. Criticism 1(*c*) is weak if a year of prosperity is selected for a cross-section study, as in the present case.

Turning now to the statistical issues listed under 2: Admittedly, the data are not perfect, but they are the best we can get, and the craftsman who wishes to construct should not disdain to work with the only tools at hand. Criticism 2(*b*) does not apply to cross-section studies since the actual values of P, L, and C are used and not index numbers as in the time studies. Criticism 2(*c*) does not hold in this case since we derived independent values for j and k. Criticism 2(*d*) is the most germane. When we minimize in the L and C directions we do get greatly differing values from those obtained by minimizing in the P direction. A full consideration of this point will be given in a forthcoming article by Miss Grace Gunn and the co-author on Australian cross-section studies and would take too long to discuss here. Suffice it to say that there is good ground to believe we should not minimize in the C direction. The co-author believes that minimization in the P direction may be defended on the ground that deviations of actual from "normal" product when measured in value terms may be due to shiftings to both left and right of the demand curves for individual products.

Criticism 3(*a*) does not apply to the function $P = L^k C^j$ which we also use. To the degree that the sum of the exponents, k and j differs from unity, criticism 3(*b*) does not apply. Criticism 4 does not apply since time is eliminated by using a cross-section study.

---

the Cobb-Douglas function, which would then take on significance for that very reason.

One of the authors has discussed the relation between technological change and his results in a generally overlooked section of *The Theory of Wages*, entitled "Progress and the Equation of Production" (*op. cit.*, pp. 209–16).

Criticisms 1(*a*), 1(*b*), and 3(*a*), stressed particularly by Durand, require consideration on the level of theoretical rather than statistical economics. Statistics can neither confirm nor refute them.

Durand insists quite correctly on sharp distinctions between the type of production function exemplified by the Cobb-Douglas (we christen this type "distributive" or "distributional") and the ordinary ("general") production functions of mathematical economics. He does not attempt to show the relations between the two types of functions, relations which make the "distributive" function a legitimate member of the economic Noah's Ark.

Both the differences and the relations can be explained and illustrated with the aid of a diagram, our Figure 2. The *L* and *C* axes of this diagram represent the quantities of two (compensatory) productive services used by entrepreneurs in production. A family of "iso-product" curves (1, 2, 3) are loci of resource-combinations yielding equal pecuniary outputs. The "iso-cost" lines (*a*, *b*, *c*) are loci of resource-combinations having equal cost to the entrepreneur. The curve *E*, called an expansion path, is the locus of points of tangency between the family of curves and the family of lines. It shows variations in proportions of resources used as total output and cost vary.[32]

The family of iso-product curves are downward projections on the (*L*, *C*) plane of two-dimensional slices of the general production function, adjusted for price changes in the case of imperfect competition. At the point of minimum average cost (which we call $\hat{p}$), its equilibrium point in the long run under pure competition, the relevant curve of the family is tangent to a homogeneous function of first degree, even though it is not of this type throughout its length.[33] And in the long run under pure competition,

[32] For clear treatment of this subject in English see Dr. Sune Carlson, *A Study on the Pure Theory of Production* (London: P. S. King & Son, Ltd., 1939), chaps. i, ii.

The straightness and parallelism of the iso-cost lines imply that the entrepreneur cannot change the relative prices of the productive services. This is not true under monopsonistic conditions.

The analysis given in the text applies to individual firms. It could be applied to individual industries or localities equally well.

[33] For a proof of this proposition see Dr. J. R. Hicks, *The Theory of Wages* (London: Macmillan & Co., Ltd., 1932), pp. 237 f.

only p of all points on the entrepreneur's production surface represents an actual entrepreneurial decision. All other points are temporary or short-run positions.

We may obtain a number of points p for a number of firms, and fit a family of iso-product curves to these points. This second

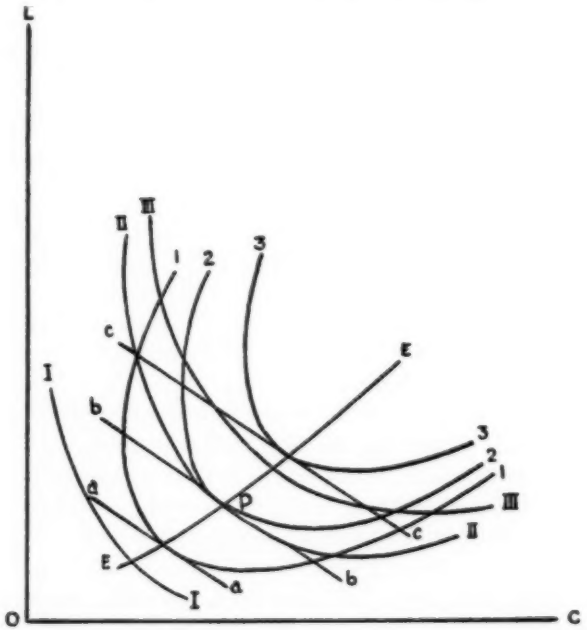

FIG. 2

family (I, II, III, of Figure 2) is a series of two-dimensional projections of the distributive production function. Since in long-run competitive equilibrium every point p corresponds to a point on a homogeneous function of the first degree, the entire family (I, II, III) may take such a functional form. Since each point on the family (I, II, III) is also a point on some family (1, 2, 3), a point corresponding to an actual rather than a hypothetical decision, it should be clear that a distributive production function differs

from a general one primarily in that each of its points has relevance to the real world.

Another difference between distributive and general production functions may be dismissed more briefly. In working with general functions, attempting, let us say, to derive a demand curve for a productive service, it is convenient to work in n dimensions, and to avoid "lumping together" of different types of "labor" and "capital." In working with a distributive function, attempting to explain an existing functional distribution of income between labor and capital, the admittedly cruder two-dimensional approach of the diagram becomes more convenient

CONCLUSIONS

The conclusion, it seems to us, still stands. The results of the early temporal studies stand confirmed by the results of the cross-section studies. And quite apart from the confirmation, the results are interesting, with their hints at increasing returns and exploitation, and with their fairly conclusive evidence of non-uniformity between subgroups.

The instability problem, of course, is real, and should not be overlooked. It makes our function appear as one of the exotic hot-house plants of economic statistics. It will not grow, this function, wherever planted. If soil be too rocky, or temperature too low, or the terra firma subject to the unstabilizing influence of earthquakes, no amount of statistical cultivation can remedy the deficiencies. The plant will then be a nonviable monstrosity, perishing in embryo. But given rare and optimal conditions, the plant will grow to maturity and fruition, with a percentage of viable results as great as can be anticipated in other branches of experimental botanizing. Moreover, we believe that we have crossed the economic species line, and proved our plant a new species, however frail, not merely a temperamental hybrid of more rugged forms such as the flowering time-series.

TABLE 3

RESULTS OF MINIMIZATION OF DEVIATIONS IN ALTERNATIVE DIRECTIONS*
(Total-capital figures used)

INDUSTRIES	No.	MINIMIZATION IN C-DIRECTION		MINIMIZATION IN L-DIRECTION	
		k	j	k	j
All†	90	0.1807	0.8273	0.9674	0.0612
Most capitalistic	23	−1.3574	2.2763	1.5053	−0.3643
Least capitalistic	32	−0.4662	1.3691	1.1422	−0.1374
Monopolistic†	14	0.3979	0.6861	0.9418	0.1567
Sweated	26	−0.6025	1.5088	1.1429	−0.1265
Clothing and textiles	16	4.7027	−3.8358	1.2852	−0.3371
Foods and beverages	12	0.3711	0.7531	0.9545	0.1816
Metals and machinery†	22	0.2293	0.7519	0.9222	0.0822

* For these results we are indebted to the careful work of Miss Grace Gunn.
† This regression, in three variables, satisfies all suggested tests for stability.

TABLE 4*

CAPITAL, LABOR, AND PRODUCT OF NINETY MAJOR AMERICAN INDUSTRIES, 1909

Industry	Total Labor	Total Capital ($000)	Fixed Capital ($000)	Value Added by Manufacturing ($000)	Adjusted Value Added ($000)	Notes
Agricultural implements	59,764	256,281	68,496	86,022	64,170	bdh
Artificial flowers, etc.	11,063	9,693	1,544	10,354	9,084	ce
Artificial stone	10,994	16,010	6,281	11,553	10,246	c
Automobiles	84,954	173,837	60,229	117,556	94,617	h
Bags and baskets	13,709	28,824	7,335	11,878	8,800	ea
Belting and hose	11,563	41,717	9,234	18,293	13,470	ab
Boots and shoes	214,085	222,324	49,031	180,060	151,662	cg
Brass and bronze products	44,613	109,319	43,648	50,761	40,952	h
Bread and bakery products	117,340	212,910	121,525	158,831	127,830	ef
Brick and tile	81,479	174,673	85,647	69,040	54,730	
Brooms and brushes	13,692	18,982	4,887	13,548	11,064	ace
Butter, cheese, etc.	23,487	71,284	48,405	39,012	27,732	f
Buttons	17,485	15,640	5,961	13,167	11,508	ceg
Canning and preserving	67,728	119,207	45,215	55,278	39,566	cf
Carpets and rugs	36,771	77,173	32,561	33,504	27,051	aeg
Carriages and wagons	76,731	175,474	48,580	77,942	65,618	
Car and shop construction	376,061	431,189	207,652	271,510	246,438	cd
Cement	29,494	187,398	114,513	33,861	19,162	bd
Chemicals	30,219	173,870	92,050	58,065	40,653	ab
Chocolate and confectionery	56,416	82,011	28,872	60,512	44,514	acef
Clocks and watches	25,386	57,500	21,941	24,066	19,390	h
Clothing, men's	262,935	275,320	21,450	270,562	190,234	ceg
Clothing, women's	172,539	129,301	16,942	175,964	146,035	ceg
Coffee and spices	13,019	46,042	7,248	27,328	18,928	bf
Coke	31,125	152,321	123,924	31,672	21,915	b
Cooperage and wooden goods	27,957	50,342	15,950	23,320	19,014	c
Copper, tin, sheet iron	82,511	217,532	118,087	87,242	68,838	h
Cordage and fibers	27,134	76,020	31,456	20,105	14,173	eg
Corsets	19,520	18,033	4,722	17,617	13,779	ceg
Cotton goods	387,394	822,238	489,815	257,383	200,054	eg
Cutlery and tools	52,082	105,946	44,142	51,450	41,287	ah
Dyeing (textile)	46,495	114,093	52,362	48,295	39,419	
Electrical machinery	105,187	267,844	74,924	112,743	86,533	dh
Engraving and lithographing	8,917	7,116	3,138	11,974	10,539	ac
Fancy articles	13,717	15,768	5,067	12,271	9,876	ce
Fertilizers	21,627	121,537	35,900	34,438	24,062	b
Firearms and ammunition	24,594	91,574	33,454	35,792	27,081	abh
Flour and grist milling	51,484	349,152	129,867	116,008	82,495	bf
Food, miscellaneous	19,834	64,685	19,803	41,389	24,763	f
Foundry and machine shop	605,634	1,514,322	617,813	688,464	541,790	h
Fur goods	14,435	29,249	1,762	24,161	20,420	eg
Furnishing goods, men's	38,382	49,009	7,875	38,585	30,605	ceg
Furniture and refrigerators	128,452	227,134	75,320	131,111	105,054	ce
Gas and electric fixtures	22,475	36,835	7,394	24,590	20,117	ch
Gas, illuminating	50,730	915,537	675,758	114,386	55,586	bd
Glass	82,959	139,584	68,291	69,831	55,924	ac
Hats and caps	45,916	58,730	17,627	45,567	38,457	aceg
Hosiery and knit goods	134,996	163,641	70,271	89,902	74,018	ceg

* "Census of Manufactures," *Thirteenth Census of the United States*, VIII (1905), 507 ff., Tables III, V.

TABLE 4—*Continued*

Industry	Total Labor	Total Capital ($000)	Fixed Capital ($000)	Value Added by Manufacturing ($000)	Adjusted Value Added ($000)	Notes
Ice, manufactured	20,041	118,641	92,430	31,636	20,842	b
Iron and steel	337,475	1,584,530	878,907	434,634	334,023	abdh
Jewelry	35,146	63,811	11,405	43,675	37,300	c
Leather goods	53,465	86,723	15,860	55,115	45,735	aceg
Leather and tanning	66,316	332,727	94,055	79,595	57,349	b
Lime	14,865	32,520	11,933	11,221	9,353	
Liquors, alcoholic	76,341	771,516	347,637	453,351	142,976	bdfa
Locomotives	16,938	52,060	18,108	16,522	13,584	dh
Lumber and timber products	736,164	1,176,675	451,573	648,011	500,232	ce
Marble and stone work	71,249	114,842	37,528	75,696	65,095	c
Mattresses and beds	13,240	23,735	8,002	15,300	12,117	
Millinery and lace	44,367	35,705	8,025	40,854	34,794	ceg
Mineral and soda waters	16,317	42,305	22,122	27,042	19,807	f
Musical instruments	43,667	106,532	21,340	48,363	39,337	a
Oil, cottonseed	21,163	91,086	58,433	28,035	18,403	b
Paint and varnish	21,440	103,995	27,438	45,873	31,586	b
Paper and wood pulp	81,223	409,348	246,059	102,215	67,056	b
Paper goods	78,119	113,003	52,048	68,867	52,435	ace
Petroleum refining	16,598	181,916	83,579	37,725	23,697	bd
Pharmaceutical supplies	39,435	105,129	22,218	94,119	56,387	a
Pottery products	60,570	141,350	71,506	54,208	42,004	e
Printing and publishing	358,042	588,346	293,343	536,101	380,819	c
Rubber goods	50,081	142,412	37,805	66,388	49,401	ae
Salt	5,506	29,012	13,060	6,125	4,211	bf
Sewing machinery	20,542	33,104	11,366	16,807	13,664	cdh
Shipbuilding	43,486	126,118	51,563	42,146	33,159	h
Silk and products	104,574	152,158	61,164	89,145	63,745	ceg
Silverware and plate	18,660	46,759	16,400	23,897	18,453	h
Slaughtering and packing	107,057	383,249	116,734	167,740	116,042	bdf
Smelting and refining	34,560	285,387	148,538	74,603	62,657	abdh
Soap	18,064	71,951	24,615	39,179	23,959	b
Stoves and furnaces	42,677	86,944	26,317	49,515	38,554	h
Sugar	23,842	282,796	109,646	52,523	33,525	abdf
Surgical and scientific instruments	28,138	58,092	22,271	40,749	31,858	ah
Tobacco manufacturing	180,003	245,660	22,532	239,509	136,618	cd
Turpentine and rosin	41,957	12,401	4,756	20,384	17,047	ce
Typewriters and business machines	21,309	53,533	15,030	35,798	24,603	adh
Wall paper and plaster	10,300	31,038	12,090	13,623	9,652	a
Wire	19,930	60,157	25,857	23,943	18,273	h
Wireworks	14,510	34,970	13,143	17,544	13,491	h
Wood, turned and carved	15,146	18,334	7,887	12,455	10,749	c
Woolen and worsted goods	174,444	430,579	167,973	153,101	122,553	g

a. These figures obtained by summation of census data for several smaller industries.
b. This industry included in the subgroup "Highly Capitalistic Industries."
c. This industry included in the subgroup "Slightly Capitalistic Industries."
d. This industry included in the subgroup "Monopolistic Industries."
e. This industry included in the subgroup "Sweated Trades."
f. This industry included in the subgroup "Foods and Beverages."
g. This industry included in the subgroup "Clothing and Textiles."
h. This industry included in the subgroup "Metals and Machinery."

MULT = $\frac{\Delta Y}{\Delta I}$ The rate of an increment of income to a corresponding increment of I (but how much is the multiplier?)

ACCEL = $\frac{I}{\Delta Y}$ The ratio of an increment of I to the increase in income which generated it (but how do you independently get ΔI?)

A SYNTHESIS OF THE PRINCIPLE OF ACCELERATION AND THE MULTIPLIER

PAUL A. SAMUELSON
Harvard University

THE principle of acceleration is one of the few tools of business-cycle analysis whose importance is universally conceded. Carefully stated, it can be made to yield information concerning the movements of investment from a knowledge of the movements of consumption. In particular, cyclical fluctuations in the latter will yield intensified periodic fluctuations in investment. C. O. Hardy, Ragnar Frisch, and other critics have rightly pointed out that it is a single relation between two series and does not constitute a self-contained, determinate business-cycle theory. Fluctuations in consumption will yield fluctuations in investment, but how do the original fluctuations in consumption arise?

It can hardly be maintained that the original propounders of the principle were unaware of this fact. J. M. Clark, for example, mentions explicitly that the volume of consumption demand is itself influenced by the level of investment through income payments to the factors producing investment goods. The following quotation will illustrate the point:

> For a full explanation, however, one must take account of factors acting in the reverse direction, namely, the fact that actual movements of consumer demand depend on the movements of purchasing power; and these in turn are governed by the rate of production in general, including that of capital equipment, and also that of durable consumption goods, such as housing and automobiles, to which the same essential principle applies.
>
> Thus, if we take as our initial fact a moderate decrease in the rate of growth of consumer demand (such as needs no particular explanation), this may result—with a lag—in a positive decline in rate of production of durable producers' or consumers' goods. This in turn reduces purchasing power, unless offset by opposite movements elsewhere, and results in a positive decrease in consumers' demand, presumably extended to more commodities than those originally affected. And this in turn further extends and intensifies the shrinkage in production of durable goods, etc. This may serve as

an answer to a criticism of this theory, made by C. O. Hardy before the American Statistical Association last December [1931], to the effect that the theory presupposes a cyclical alternation of expansions and contractions in consumer demand, and leaves these movements to be explained. As stated above, the actual contractions (and the more rapid expansions), if they do arise as original movements produced by "outside causes," can be explained as results of an intensifying mechanism whereby a fluctuation in the rate of growth may be converted into alternations of rapid expansion and absolute contraction, through the interaction of the two sets of forces indicated.[1]

Although the adherents of the principle of acceleration undoubtedly have this second independent relation in mind, its implications are not systematically explored, even to the extent of the construction of arithmetic examples illustrating the mutual interactions of these two principles.

On the other hand, J. M. Keynes in the *General Theory* has concentrated on the manner in which net investment acts upon and generates income and consumption. This is the so-called doctrine of the multiplier, the applicability of which is not confined to the analysis of governmental expenditures. Here, too, Clark has made substantial contributions. We have then two distinct analytical relations growing up side by side, and until recently their mutual interactions have not been exhaustively examined. R. F. Harrod and G. Haberler and A. H. Hansen have to a considerable degree endeavored to remedy matters in this respect.[2]

There remain, nevertheless, as I hope to show, many ambiguities and oversimplifications, to say nothing of incorrect conclusions. Mention may be made of a few such problems. Must the combined action of the acceleration principle and the multiplier lead to a turning-point? Can the increase in replacement demand be regarded as an offset to a decline in the rate of growth of consumption? What is the role of frictions, time lags, and immobili-

[1] "Capital Production and Consumer-taking: A Further Word," *Journal of Political Economy*, October, 1932, pp. 692–93. This is a reply to Frisch's article, "The Interrelation between Capital Production and Consumer-taking," *Journal of Political Economy*, October, 1931, and to a subsequent article in the same journal in April, 1932.

[2] *The Trade Cycle* (Oxford: Clarendon Press, 1936); *Prosperity and Depression* (Geneva: League of Nations, 1937); *Full Recovery or Stagnation* (New York: W. W. Norton & Co., 1938).

ties of the factors of production? About what level will the system fluctuate? Are the results independent of the quantitative strengths of the various factors and the shape of the consumption function?

PRESENT STATUS OF THE THEORY

It may be well to review, if only in a superficial way, the views of preceding writers upon these controversial issues. No attempt is made throughout to appraise the importance of the factors considered as compared to other forces making for modern business cycles; this can be done only after the nature of these processes is clearly understood.

All writers are agreed that an advance in consumption can induce investment which in turn may lead to a further increase in consumption, and the process may continue for some time. Why must it end? Clark, Frisch, Haberler, and Hansen stress the fact that the ceiling of full employment, or at least perverse price-cost movements due to the appearance of bottlenecks, is the cause of the downturn.[3] Harrod appeals to the action of two dynamic determinants, each of which lowers the average propensity to consume for the community.

Are we to believe, then, that in the absence of depressing price-cost and interest movements the expansion would never cease? Must we invoke the action of the dynamic determinants? In the following section model sequences will be developed showing that neither of these views is necessarily correct.

ASSUMPTIONS UNDERLYING THE ANALYSIS

According to the acceleration principle in its simplest form, net investment, or at least some portion of it, is directly proportional to the time increase in consumption, the factor of proportionality or "relation" being the amount of equipment necessary to produce one unit of consumers' goods. Of course, gross investment will

[3] There are minor inconsistencies here. Thus, Clark (*Economics of Overhead Costs* [Chicago: University of Chicago Press, 1923], pp. 393–94) attributes the downturn to the fact that capital-goods industries reach full capacity and cannot expand output. Haberler's explanation of the turning-point seems to emphasize the limiting of real demand by the ceiling of full employment leading to a falling-off of investment orders. The losses in this sphere spread cumulatively.

exceed net investment by an amount equal to replacement. Frisch has pointed out some errors which may result if replacement demand is completely ignored.[4] Hansen has quoted with approval this argument in his review of Harrod's *Trade Cycle*, charging that the neglect of replacement leads fallaciously to the conclusion that the downturn is inevitable. Later an attempt will be made to show that for the purpose in hand Harrod's neglect of replacement is not only permissible but almost mandatory.

The national income of any period is equal to the sum of consumption expenditures plus the value of net investment. According to the Keynesian analysis, consumption expenditure is related to income received by a definite psychological law. As income increases the marginal and average propensities to consume fall, and the former is always less than unity.[5] There is some ambiguity as to the time sequence involved in this relationship. As long as one's interest is in equilibrium states, as is most of the Keynesian analysis, the issue does not arise. But for present purposes it must be squarely faced since entirely different results emerge from different assumptions.

At least two alternatives suggest themselves. The first is to assume that consumption bears an invariant relation to income at some previous point in time (or over a previous interval of time). Another is to assume that current consumption bears an invariant relationship to current income. It is certainly true that concomitantly with an existing amount of income there will be an existing amount of consumption. But unless the relationship is an invariant one, this "instantaneous" multiplier is a poor foundation upon which to build a theory. Nevertheless, we shall consider both possibilities.

If we have two relationships holding between two variables, it should be possible merely from a knowledge of the system over some initial periods of time to deduce its movements from then on. Let us first consider the position of the equilibrium state

[4] *Op. cit.*

[5] This holds for a single individual. For society as a whole these tendencies may be made stronger by the fact that at high levels of income profits may be high, affecting the distribution of income in such a way as to diminish the propensity to consume.

which, if established, would maintain itself and around which all oscillations take place. For the moment let us neglect the existence of any spontaneous, anticipatory investment unrelated to the increase in consumption. In the stationary condition the time increase of consumption must be zero, and hence induced investment must be equal to zero. What stationary level is compatible with no net investment? Obviously, in order that businesses as a whole shall not make losses, they must receive back from consumers the whole amount which they pay out to factors as costs

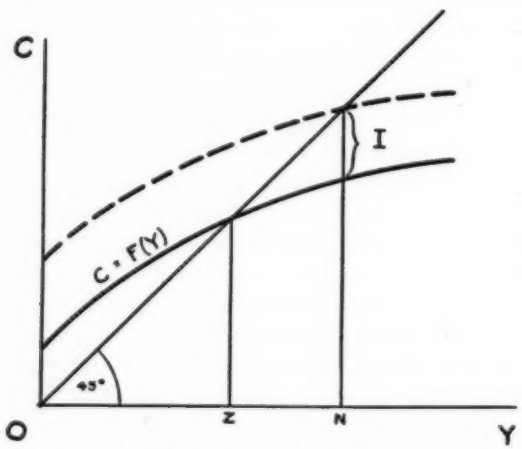

FIG. 1.—Determination of the level of national income

of production. Thus, in the absence of spontaneous net investment the stationary level around which the system will oscillate is that determined by the condition that the average propensity to consume be equal to unity. In Figure 1 a typical consumption function is indicated. The equilibrium is determined at the level of income OZ where a 45° line intersects the consumption function.

In any healthy society, however, there will be some continuous stream of spontaneous net investment. The effect of this is to raise the level at which income can remain stationary. People can save that part of the income paid to them as factors of production which does not represent costs of current production but is net in-

vestment, and there will not result losses for enterprises as a whole. The existence of spontaneous net investment can be regarded as raising the consumption function to the level of the dotted curve in Figure 1. The stationary equilibrium level in our healthy society would be at ON.

There is, of course, no reason why the stationary equilibrium level could not be very near the level of full employment. *The acceleration principle can determine the nature of the oscillations but not the average level of the system.* As we shall see, there is less to be feared from the operation of the acceleration principle than from the shrinkage of investment outlets in a stagnant society. Moreover, there is good reason to believe that in an economy whose levels of spontaneous investment and income are high the operation of the acceleration principle will be less strong than in an economy whose level of stationary equilibrium is low.

Let us proceed to show the development of our system from its initial state. Let us suppose that we know the amount of consumption in two successive periods. The national income, Y_2, for the second period will be equal to the amount of spontaneous net investment, assumed throughout to be equal to a constant, A, plus induced private investment, assumed to be proportional to the difference between consumption of that period and the previous period, plus the amount of consumption of that period, C_2, or

$$Y_2 = A + \beta(C_2 - C_1) + C_2 ,$$

where β is the numerical value of the "relation."

According to our first hypothesis, national income paid out in one period yields consumption in the following period as given by our consumption function. Hence

$$\begin{aligned} C_3 &= F(Y_3) \\ &= F(A + [1 + \beta]C_2 - \beta C_1) , \end{aligned}$$

where F is a function having the properties indicated in Figure 1. More generally, if we know consumption at time $t - 1$ and $t - 2$, we can easily compute it for time t by the following formula:

$$C_t = F(A + [1 + \beta]C_{t-1} - \beta C_{t-2}) .$$

Given our consumption function, the level of spontaneous investment, the strength of the "relation," and the value of consumption in two initial periods, the behavior of all future consumption and national income is easily determined.

In order to investigate the possible types of behavior to be expected, let us for the moment consider the special type of a linear consumption function with marginal propensity to consume less

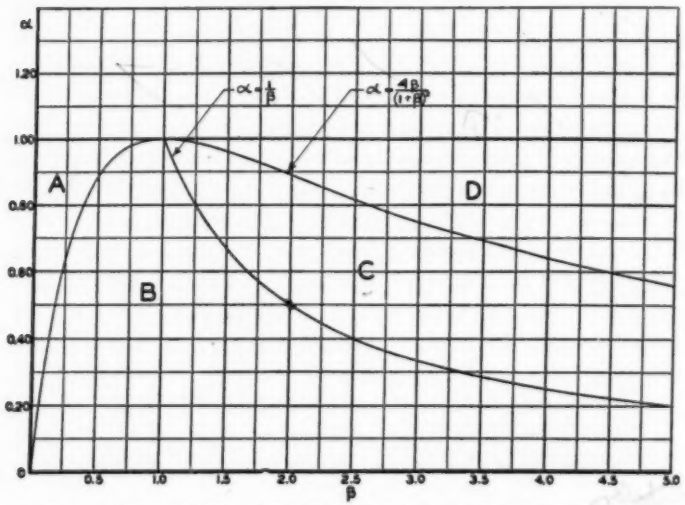

FIG. 2.—Diagram showing boundaries of regions yielding different qualitative behavior of national income (Reproduced from *Review of Economic Statistics*, May, 1939, p. 78.)

than unity. This case has been discussed by the writer in connection with the analysis of governmental expenditure, and we may draw upon the results there derived.[6]

By simple numerical examples three misconceptions can be revealed. First, even without the action of Harrod's two dynamic determinants and without any price or interest-rate changes, an expansion will always come to an end for certain values of the marginal propensity to consume, α, and the "relation," β. Thus,

[6] P. A. Samuelson, "Interactions between the Acceleration Principle and the Multiplier," *Review of Economic Statistics*, May, 1939, pp. 75–78.

for the marginal propensity equal to one-half and the "relation" equal to one, any expansion must lead to a downturn. (This is true of all values of α and β lying in Regions B and C in Fig. 2, reproduced from p. 78 of the article referred to above.)

Second, the fact that the marginal propensity to consume is always less than unity so that there is always some extra saving out of income is not sufficient to lead to a downturn or to the end of a cumulative movement. Thus, for $\alpha = 0.5$ and $\beta = 5.0$, any cumulative movement would go on indefinitely at an increasing rate (see Region D in Fig. 2).

Third, a cumulative movement can end with an approach to the stationary equilibrium level with no downturn at all. If this equilibrium level is just below the level of full employment, it is possible for the action of the acceleration principle to lead to an asymptotic approach to full employment. For $\alpha = 0.9$ and $\beta = 0.5$, any constructed numerical example will bear this out (see all points in Region A of Fig. 2).

It is desirable, moreover, to pursue the development of the system beyond the first turning-point to examine its possible behavior. For the special linear case the results derived previously can be briefly summarized. With any given value for the propensity to consume, small values of the "relation" yield no cyclical behavior, merely asymptotic approaches to stationary equilibrium (Region A). For the same α, slightly larger values for β lead to cyclical oscillations which become smaller and smaller (Region B). Still larger values of the "relation" result in cyclical oscillations becoming greater and greater but oscillating around the position of stationary equilibrium (Region C). Very large values of β lead to explosive cumulative movements growing at a rate of compound interest (Region D).

EFFECT OF CHANGES IN THE MARGINAL PROPENSITY TO CONSUME

We have seen that large constant values of the marginal propensity to consume yield "explosive" types of behavior. Obviously, these have no empirical counterparts. At worst, this would compel us to the interpretation that cumulative movements

would never come to an end in the absence of price-cost and interest-rate changes. In the real world the latter must take place at sufficiently high levels of income, and these anomalous behavior patterns will not be exemplified.

Fortunately, however, it is not necessary to introduce elements extraneous to our model in order to exclude these phenomena. If we drop the assumption of linearity of the consumption function and let the marginal propensity decrease as income increases, approaching zero in the limit, we shall effectively dispose of the possibility of an unending, cumulative upward movement. This destroys the mathematical simplicity of our model, but the broad qualitative behavior patterns can still be traced. Moreover, the elaborate analysis of the linear case is still useful for understanding the behavior of our system in the neighborhood of the stationary equilibrium level.

Of course, the decrease of the marginal propensity to consume with high levels of income cannot help to end a cumulative downward movement but will rather aggravate the difficulty. It is necessary, therefore, to relax the assumption of linearity with respect to the "relation." Strictly speaking, net investment can be negative only to the extent of deferred replacement or consumption. This provides a lower bound to the movements of our system. It must be emphasized that this lower bound will not be reached except possibly for systems with large values of the "relation" and of the marginal propensity to consume, and even here it may depend upon the original conditions.

We may summarize the results of our analysis in the following propositions. (1) The combined action of the acceleration principle and the multiplier can result in cumulative movements. (2) For particular numerical values of the relations assumed there may result an asymptotic approach to the stationary equilibrium level justified by the amount of spontaneous net investment and the marginal propensity to consume. In other words, not all cumulative movements are disequilibrating. (3) There may result cumulative movements which go past the position of equilibrium. Even without the action of Harrod's first two dynamic determinants, for all except large values of the multiplier and "relation"

the cumulative movements will come to an end. For large values of the multiplier and "relation" (in the neighborhood of the stationary equilibrium level) the fact that the relationships are not linear (of which Harrod's dynamic determinants are one expression) leads to the reversal of any disequilibrating cumulative movement in every case. (4) Again, depending upon the numerical strength of the different factors, the cyclical patterns which result (if any do!) may or may not be self-perpetuating. They may well be damped, depending upon the initial conditions and numerical values of the system's determinants.[7] Moreover, successive cycles need not be similar in timing or amplitude. (5) Small values of the multiplier and "relation" are conducive to stability. Therefore, systems with a large volume of investment outlets and with small propensities to consume are least likely to be affected seriously by the acceleration principle. (6) From the long-run point of view Keynes was partially justified in ignoring the acceleration principle completely. The average level of the system is independent of its operation, depending rather upon the level of investment outlets.[8]

CRITICISM OF EXISTING VIEWS

A comparison of the foregoing results with Harrod's brilliant chapter ii will reveal many discrepancies. Upon rigorous analysis his exposition will be found to abound with *non sequiturs* and oversimplifications. On the whole, Harrod's intuition surpasses his reasoned conclusions—of what investigator worth his salt is this not true? In addition to differences adumbrated above, it may be well to point out that Harrod does not use the acceleration principle to explain the lower turning-point but introduces an extraneous factor—the accumulation of deferred replacement.

[7] There remains one interesting problem still to be explored. Mathematical analysis of the nonlinear case may reveal that for certain equilibrium values of α and β a periodic motion of definite amplitude will always be approached regardless of initial conditions. Such a relation can never result from systems of difference equations with constant coefficients, involving assumptions of linearity. This illustrates the inadequacy of such assumptions except for the analysis of small oscillations.

[8] A. H. Hansen makes this same point in more detail in a forthcoming volume.

This explains why according to his analysis the recession must every time go to "the bottom." Simple arithmetical examples readily show that such need not be the case. The same examples suggest that Harrod is wrong in his belief that the height of the boom has no effect on the depth of the depression. These indicate that the height of the boom determines the rate at which income is falling at the point of stationary equilibrium, and this in turn determines the depths to which the system must fall before the upturn comes.

It may be further noted that at the upper turning-point it is not necessary to have immobilities of the prime factors in producers' and consumers' goods industries. According to the Keynesian analysis, at this point the level of effective demand is such that no additional workers can be absorbed in the consumption trades. Non-Keynesian economists will only require that the general wage rate be not perfectly flexible. Finally, as previously stated, I believe that the possibility of a low secular level of spontaneous investment is more to be regarded with gloom than the action of the acceleration principle as such.

On the other hand, Harrod can be defended against one adverse criticism. Hansen charges him with ignoring the Frisch argument that total capital construction can level out, even if the rate of increase of consumption begins to fall. This is correct but hardly relevant to the present purpose. As Hansen himself has pointed out to the writer, it would involve double-counting to include in the computation of the national income both consumption and the replacement expenditures imputable as costs of that consumption. Only net investment is "multiplied" to give the national income; as a first approximation Harrod was justified in neglecting replacement in the formal relation.[9]

It may be briefly noted that the time lag between income paid out and consumption is necessary if there is to be a cyclical pat-

[9] Actually, there remain problems connected with the age distribution of durable equipment. What is needed is a concept of investment which is "net" for the period in question, even though it is replacement from the standpoint of history. Still better, we need a concept of net income creating expenditure of business enterprise, analogous to the concept of governmental net income creating expenditure employed by some American economists.

tern. Otherwise, there can be only a one-way movement away from equilibrium. Thus, if we start out with consumption above the equilibrium level, in the following period consumption must rise, or else income will not be at the level given by the multiplier analysis—i.e., unless consumption rises an appropriate amount, people will not be saving and spending the amounts necessary to make savings and investment in the Keynesian sense simultaneously equal. The action of Harrod's first two dynamic determinants makes the disequilibrating movement worse. The same argument holds if the instantaneous rate of change of consumption is considered in place of a period analysis.

CONCLUSION

It is a matter of indifference for the present purpose what terminology one employs with respect to savings and investment. These can be defined in the Keynesian manner to be equal, or the Robertsonian terminology may be preferred, in terms of which they can be unequal. Neither offers any advantage. The numerical relations of the acceleration principle and the multiplier generate the behavior of our system. The equality of savings and investment throws no light on the process; the inequality of the Robertsonian magnitudes is equally fruitless, being no more than a reflection of the fact that the level of income is changing. From a strictly logical standpoint controversy over terminology is sterile; the flexible mind will adopt the terminology of his opponent of the moment.

In concluding I should like to point out that, throughout, all relations have been assumed to hold rigidly. Obvious qualifications must be made before the results can be applied to the real world.

INTERNAL COMMERCE AND THE DEVELOPMENT OF NATIONAL ECONOMY BEFORE 1860[1]

LOUIS BERNARD SCHMIDT
Iowa State College

THE rapid rise and growth of the internal commerce of the United States from 1815 to 1860 constitutes an event of profound significance in American development. It began with the recession of the frontier beyond the fall line during the latter part of the eighteenth century, but it was of negligible importance to the close of the War of 1812. Foreign commerce was the predominant interest while internal commerce was limited for the most part to the Atlantic and Gulf regions. The merchants of the seaboard cities sent a few necessities and luxuries up the navigable rivers in exchange for the livestock and extractive products of the interior. The rapid extension of internal commerce after 1815 gave rise to regional specialization, developed metropolitan economy, and diminished the dependence of the maritime and staple-producing sections on Europe. It marked the transition of the United States from colonial to national economy. It was intimately connected with an expanding foreign commerce which, however, did not keep pace with the economic development of the country, as shown by the fact that the annual per capita value of American exports was reduced from $22.83 in the decade 1791–1800 to $11.27 in the decade 1841–50. That is to say, the domestic markets absorbed an increasing proportion of the nation's commerce, while foreign commerce underwent a relative decline. This constituted a tangible basis for Clay's home-market argument in the tariff debates of 1824. Internal commerce achieved priority. It gave rise to those rivalries for commercial ascendancy between cities which are still a continuing

[1] A paper read at the annual meeting of the Mississippi Valley Historical Association in Memphis, Tennessee, April 20, 1939.

factor in American development. It transcends in importance the introduction of slavery in the plantation system of the southern states or the introduction of the factory system in the cotton-textile industry of New England concerning which so many papers and monographs have been written.[2]

The purpose of this paper is to present a survey of the part internal commerce played in the economic development of the United States before 1860.[3] In essaying this task it will be necessary, first, to review in broad outlines the streams of commerce between the three great sections of the country—the food-producing West, the plantation South, and the shipping-manufacturing-banking East—and, second, to consider the influence of internal

[2] The best general historical survey of the internal commerce of the United States is presented in E. R. Johnson *et al.*, *History of Domestic and Foreign Commerce of the United States* (2 vols.; Washington, 1915). For the period under review see especially Vol. I, chaps. xiv, xix; Vol. II, chap. xxiv. Good source materials may be found in E. L. Bogart and C. M. Thompson, *Readings in the Economic History of the United States* (New York, 1915), chap. xii; and G. S. Callender, *Selections from the Economic History of the United States, 1765–1860* (Boston, 1909), chap. vii. Official documents covering this period are: I. D. Andrews, *Trade and Commerce of the British North American Colonies and the Trade of the Great Lakes and Rivers* (House Executive Doc. No. 136; 32d Cong., 1st sess. [Washington, 1853]), which is an authoritative contemporary study; and *The Report of the Secretary of the Treasury, Statistics of Foreign and Domestic Commerce of the United States, Embracing Historical Review* (Washington, 1864). Later official documents include, especially, W. F. Switzler, *Report on the Internal Commerce of the United States, 1887* (Washington: Bureau of Statistics, Treasury Department, 1888), esp. pp. 178–225; and F. H. Dixon, *A Traffic History of the Mississippi River System* (Washington, 1910). *Niles' Weekly Register* (Baltimore, 1811–49); *Hunt's Merchants' Magazine and Commercial Review* (New York, 1839–70) and *DeBow's Review* (New Orleans, 1846–70) are indispensable sources of information.

[3] The foundation of this study is my paper, "The Internal Grain Trade of the United States, 1850–1860," *Iowa Journal of History and Politics*, XVIII (1920), 94–124. The reader is also referred to the following papers which have a bearing on various aspects of this subject: R. B. Way, "The Commerce of the Lower-Mississippi in the Period, 1830–1860," *Proceedings of the Mississippi Valley Historical Association*, X (1918–19), 57–68; G. W. Stephens, "Some Aspects of Early Intersectional Rivalry for the Commerce of the Upper Mississippi Valley," *Washington University Studies*, "Humanistic Series," X, No. 2 (1923), 277–300; J. B. Appleton, "The Declining Significance of the Mississippi as a Commercial Highway in the Middle of the Nineteenth Century," *Bulletin of the Geographical Society of Philadelphia*, XXVIII, No. 4 (1930), 267–74; J. W. Scott, "Internal Trade of the United States," *Hunt's Merchants' Magazine*, VIII (1843), 321–30, 447–58; *ibid.*, IX (1843), 31–47.

trade on regional specialization and the development of national economy.

The several streams of commerce between the different sections of the country were, first, the trade on the western rivers consisting for the most part of the farm products of the Middle West which were shipped down the Mississippi River to the southern planters in return for which the principal plantation products sent up the river were molasses and sugar; second, the coastwise trade consisting of manufactured goods from eastern to southern ports with return cargoes of southern staples for the East or for export, supplemented by shipments of western food products for the New England states; and, third, the trade over the canals, the Great Lakes, and the railroads, consisting of eastern and imported manufactures shipped westward to supply the western farmers or to be sent on down the river to the planters; while the East, at first dependent on its own food supplies supplemented by the coastal trade, began to receive direct shipments of western produce over the Erie Canal which was swelled to large proportions after the entry of the railroads into the Middle West in the fifties. Let us consider first the internal commerce between the Middle West and the South.

A history of the commerce between the Middle West and the South before 1860 is largely an account of the commerce on the Mississippi, since there were no through rail connections between these sections until near the close of the period. There were, however, two great obstacles to the development of the Middle West before 1815: one was the difficulty of attracting immigrants to this region; the other was absence of markets for western products. These obstacles were overcome after 1815 by the introduction of the steamboat on the western rivers and by the extension of cotton culture into the Southwest. These two events led to a division of labor between the farmers of the Middle West and the planters of the South and gave rise to an important trade on the western rivers comparable to the coastwise trade between the northern colonies and the West Indies before the Revolution.[4]

[4] "This commerce between different agricultural communities in America has played a more important role in our economic history than seems to have been

The Middle West, therefore, found its first important market in the South, which devoted itself to the production of cotton and other plantation staples for the rapidly expanding markets in the East and abroad.

The steamboat became the symbol of western development, the importance of which was reflected in the rising tide of immigration into both the upper and the lower regions of the Mississippi Valley and the rapidly expanding shipments of extractive products down the river, consisting principally of bacon, beef, cotton, corn and corn meal, coal, flour, lard, lead, lumber, pork, sugar, tobacco, wheat, and whiskey, not to mention a considerable variety of minor products from apples and butter to leather and window glass which swelled the volume of trade.[5] Frontier towns on the western rivers sprang into life and became commercial centers, foremost among which were Pittsburgh, Cincinnati, and Louisville on the Ohio; Memphis, Vicksburg, Natchez, and New Orleans on the Lower Mississippi; St. Louis, Keokuk, Burlington, Davenport, Clinton, Dubuque, and St. Paul on the Upper Mississippi; and numerous commercial towns situated on the navi-

---

appreciated. It began in colonial times and shows itself in the trade between the Northern Colonies and the West Indies which was reckoned by the colonists themselves to be of vital importance to their prosperity. It appears again in the first part of the nineteenth century when a trade grew up on our western rivers between the lower South and the new states of the West of exactly the same character as that which went up and down the Atlantic coast between the West Indies and the Northern Colonies during the eighteenth century. It was in both cases a trade between a community of planters using slave labor to produce a few valuable staples which found a ready sale in the markets of the world on one hand, and a community of small farmers (who in many cases were partly fishermen) producing food and crude supplies on the other. The basis of the trade in both cases was the fact that the planter found it more profitable to devote his slave labor to the production of valuable staples to be sold in the markets of the world than to use it in producing the food and other supplies which he needed. So long as there were other agricultural communities ready and willing to furnish these supplies, it was cheaper to procure them by trade than by direct production" (Callender, *op. cit.*, pp. 300–301 n.).

[5] Switzler, *op. cit.*, pp. 200–202, 216–21. The flatboats continued to supplement the steamers after the latter, in 1825, had gained the ascendancy as freight-carriers. They could carry much produce which the steamboats could not handle. As late as 1840 one-fifth of the freight handled on the Lower Mississippi went principally by flatboats. There was a steady decline in this form of traffic to 1860 (Way, *op. cit.*, p. 58; Dixon, *op. cit.*, p. 14).

gable tributaries of the Ohio-Mississippi river systems.[6] New Orleans advanced with such rapidity that *DeBow's Review* declared: "No city of the world has ever advanced as a mart of commerce with such gigantic and rapid strides as New Orleans."[7] The number of steamboat arrivals at New Orleans increased from 989 with 260,900 tons of freight in 1830 to 3,566 with 2,187,560 tons of freight in 1860. The value of the southern staples and western produce received at New Orleans mounted from $22,065,518 in 1830 to $185,211,254 in 1860. The decade of the fifties was the golden age of river commerce, and the year 1859–60 records the maximum of river prosperity.[8]

The rapid growth in the receipts of raw and processed products from the interior was accompanied by significant changes in the relative importance of commodities which had an important bearing on the economic and political development of the United States. The Mississippi carried a much larger volume of traffic but a smaller percentage of the entire commerce of the valley. The loss was most marked in western produce, which was diverted eastward and southeastward over the railroads to the Atlantic seaboard for domestic consumption or for export to Europe and the West Indies. The receipts of western products at New Orleans showed little increase during the fifties, while cotton receipts increased 160 per cent and molasses and sugar receipts, 66 per cent. Western products, which in 1820 constituted 58 per cent of the total receipts of New Orleans, had by 1860 declined to 23 per cent.[9] That is to say, the products of the Ohio and Upper

[6] There were no cities of any importance in the Mississippi Valley before the War of 1812, with the single exception of New Orleans, which in 1810 had a population of 24,562. Pittsburgh had but 4,768 and Cincinnati only 2,540. The rapid rise and growth of commercial cities constitutes one of the most significant features of American economic development after 1830.

[7] Switzler, *op. cit.*, p. 205.

[8] J. D. B. DeBow, *The Industrial Resources of the Southern and Western States* (1852), II, 134–43, 146–47, 149–50; Switzler, *op. cit.*, pp. 199–202, 209, 210, 215–24; Callender, *op. cit.*, pp. 313–21. The flatboat slowly went out before 1860.

[9] Switzler, *op. cit.*, pp. 210 and 215. The British West India trade, from which the United States had been excluded since the Revolution, was reopened in 1830,

Mississippi valleys shipped to New Orleans were no longer for export but were for consumption on the plantations. This does not represent, however, the full measure of the market for western produce in the South, for increasing quantities of raw and processed products of the farms were diverted from the Ohio and Mississippi rivers over the southern railroads for consumption on the plantations and in the rising commercial centers.[10] Nor does it account for the trade in livestock, the large droves of cattle, hogs, mules, and horses which were driven South annually to supply the needs of the planters.[11] The West supplied the South with these products, as the latter turned its attention more exclusively to the production of cotton, sugar, and tobacco in response to domestic and foreign market demands. This dependence of the South on the West became very pronounced after 1830. It was estimated in 1845 that the southern planters in twenty years had purchased $900,000,000 worth of products from the

---

when American and British vessels were placed on an equality with respect to this trade. Western produce was shipped to the West Indies by way of the Mississippi River and New Orleans until this trade was diverted over the eastern routes to the Atlantic seaboard.

[10] The Memphis-Charleston railroad was completed near the close of the fifties, connection having been made with the Nashville and Chattanooga railroad. A railroad was completed from Atlanta to Chattanooga in 1850, and connections of this line with the Virginia line were completed in 1856. The Chattanooga and Nashville line was completed in 1854, connecting with Memphis in 1857. By 1859 direct rail connections had been completed between Louisville and Nashville; between Memphis and Charleston; and between Mobile and Columbus, Tennessee. By 1860 the Vicksburg and Jackson line joined the Mobile and Ohio railroad, making possible the diversion of the Vicksburg trade eastward from the Mississippi and southward to New Orleans and nearly completing the line to Montgomery, Macon, and Savannah.

[11] "Some idea may be formed of the extent of this traffic, when it is mentioned that not less than 10,000 horses and mules, from these middle and western states come down every year for sale to the purchasers in the Atlantic States, and the cities of the Coast, as many as 500 at a time frequently passing through Greenville [South Carolina] in a single day. The horses were quite as fine as ordinary horses seen at fairs and markets in England; but the mules were by far the most beautiful I had ever seen, surpassing even the finest of those in Spain and Portugal" (quoted from J. S. Buckingham, *Slave States of America* [1841], II, 203–4, by Callender, *op. cit.*, p. 292).

western and border states.[12] The annual purchase of wheat from the West in the fifties amounted to 10,000,000 bushels.[13]

There was a considerable upstream traffic in western produce originally shipped to New Orleans and then reshipped to the

[12] Edward Ingle, *Southern Sidelights* (New York, 1896), p. 55. ". . . . An expenditure made necessary because they had employed all their labor and land in staple crops. . . . . Cotton alone of all the Southern crops showed an increase everywhere. . . . . Its great advance, compared with the condition of other crops . . . . indicates that its immediate importance overshadowed in the minds of planters the direct and indirect benefits that might have accrued to the South had every State and every planter turned all opportunities to account" (*ibid.*, p. 66).

The southern market for western pork presents an enigma. Charles T. Leavitt observes that the South possessed more cattle and nearly as many swine per hundred of population as any other section of the country, as shown by the United States Census of 1840 (105.6 cattle and 217.5 swine, as against 95.9 cattle and 224 swine per 100 population in the western states), yet the South remained up to the Civil War one of the best markets for western provisions. Statistical evidence quite clearly shows that the South absorbed a considerable quantity of western pork and bacon. Taking the difference in figures between the amount of pork and bacon imported into New Orleans from the interior and the exports at New Orleans, we find that in the 1839–40 fiscal year (the first time that both sets of figures are available) 114,140 barrels of pork and bacon and 8,505 barrels of beef were left in New Orleans, presumably for sale in the South (see Charles T. Leavitt, "Some Economic Aspects of the Western Meat-packing Industry," *Journal of Business of the University of Chicago*, IV [1931], 82–89).

Mr. Leavitt concludes that the pork and bacon left at New Orleans during 1844–45 amounted to 110,735 barrels, or approximately 18.5 per cent of the total pork receipts at New Orleans. Figures on destination of exports from New Orleans show that Charleston absorbed an additional 1.9 per cent and that the coastwise ports which did not include Boston, New York, Philadelphia, or Baltimore, took 2.9 per cent. "It can be assumed with safety, then, that the South took somewhere between 15 percent and 25 percent of the pork packed in the west in that year. For the year 1850–1851, using the same methods, 42 percent of the pork and bacon packed in the west was left at New Orleans, and the coastwise ports took 13.9 percent. . . . . It seems certain that the South absorbed from a third to over one-half of the western pork and bacon of that year" (*ibid.*, p. 85). "Between 1852 and 1857 the quantity of pork and bacon left at New Orleans varied from a high point of 276,000 barrels in 1852–1853 to 161,000 barrels in 1856–1857. From then on to 1860, for some not altogether explainable reason, it jumped to over 300,000 barrels, the figures standing at 382,000 barrels in the 1859–1860 season" (*ibid.*, p. 86). The Louisville-Nashville railroad was completed in 1854. This furnished another route for provisions to enter the South, though there are no statistics available. Imports into Mobile for 1854–60 vary from 70,448 barrels in 1855–56 to 111,588 barrels in 1859–60. New Orleans and Mobile in 1859–60 took 29 per cent of the pack of the West (*ibid.*; cf. Callender, *op. cit*, pp. 290–301).

[13] Schmidt, *op. cit.*, p. 13. "The eleven Southern States in 1850 with a population of 7,349,000 produced 17,796,000 bushels, or two and one-half bushels per

plantations of Mississippi, Louisiana, and Arkansas. This amounted to as much as one-half of the downstream trade. The principle long-distance shipments upstream consisted of sugar and molasses with the addition of coffee and heavy implements and machinery. The West received the more-expensive and less-bulky manufactures from the East and abroad over the direct lines of transportation. New Orleans, therefore, became an export center for southern staples, but it was an import center for eastern and foreign goods only to a minor extent. At first an export center for western produce, New Orleans later lost this trade, which was diverted eastward and southeastward over the railroads. The southern staples—cotton, sugar and molasses, and tobacco—replaced western produce in the export trade of New Orleans.[14]

---

capita; in 1860 these states with a population of 9,103,000 produced 31,422,000 bushels, or three and one-half bushels per capita. On the other hand, in 1850, the ten Western grain-growing states with a population of 6,380,000 produced 46,076,000 bushels, or seven and one-fourth bushels per capita; in 1860 these States with a population of 10,219,000 produced 102,251,000 bushels, or ten bushels per capita" (*ibid.*, pp. 7–8). Cf. Callender, *op. cit.*, p. 299; E. D. Fite, *Social and Industrial Conditions in the North during the Civil War* (New York, 1910), chap. i.

[14] New Orleans thus became an export center for the surplus products of the Lower Mississippi Valley: principally cotton, molasses and sugar, and tobacco. "The territory immediately tributary to New Orleans included all Louisiana, half of the settled portion of Texas, half of Indian Territory, three-fourths of Arkansas, three-fourths of Mississippi, a third of Tennessee, and considerable portions of Kentucky and Alabama, probably 300,000 square miles, while indirectly tributary to it, through St. Louis, Cincinnati, and Louisville, was a region twice as great" (Switzler, *op. cit.*, p. 215). "New Orleans continued to be an important export center for the lead trade of the Upper Mississippi Valley. Over 95 percent of the lead shipped eastward during the period from 1823 to 1848 made its way down the Mississippi River to New Orleans and thence by ocean to the eastern markets" (William J. Peterson, "The Lead Trade of the Upper Mississippi, 1823–1848," *Mississippi Valley Historical Review*, XVII [1930], 97). "The value of the lead mined from 1841 to 1848 was $8,676,647.39. . . . . For the year 1847 alone, the total value of lead mined was $1,654,077.60" (*ibid.*, p. 75). The lead-mining business and trade had an important influence on the development of the Upper Mississippi.

The cotton exports of New Orleans for the year 1842–43 amounted to 1,088,870 bales; tobacco, 89,891 hogsheads; sugar, 66,044 hogsheads; molasses, 66,901 hogsheads (upriver shipments of sugar and molasses excepted); flour, 338,772 barrels; pork, 159,774 barrels; bacon, 23,383 hogsheads; lard, 737,729 kegs; beef, 4,424 barrels; lead, 542,172 pigs; whiskey, 32,136 barrels; corn, 672,316 sacks (*Hunt's Merchants' Magazine*, IX [1843], 568–70). Cf. Switzler, *op. cit.*, p. 221; Callender, *op. cit.*, pp. 318 and 319; DeBow, *op. cit.*, II, 144–45, 152–54.

It was not until a southern market demand was created that the West definitely entered upon the era of commercial expansion. The explanation of this fact lies in the rapid extension of cotton culture over the Southwest, sugar production in Louisiana, and tobacco-growing in Kentucky and Tennessee.[15] The heavy demand, both domestic and foreign, for cotton, sugar, and tobacco, and the strategic position of the South in meeting this demand led the people of the South Atlantic and Gulf states in particular to devote themselves to the production and marketing of these staples and to neglect other branches of agriculture for which the Middle West possessed natural advantages. The South, therefore, became the first important market for the grain and the livestock and animal products of the Middle West.[16] The prosperity of those two sections in turn influenced profoundly the East, which underwent a great economic transformation.

The commerce between the South and the East was predominantly a coastwise trade which expanded with remarkable rapidity after 1830, as the "American system" was developed.[17] It was far more valuable than either the internal or the foreign commerce of the United States. The most important products of the South entering into this trade were cotton from the South Atlantic and Gulf states; tobacco, rice, and naval stores from the South Atlantic states; and sugar and molasses from Louisiana. These products were shipped to the northern ports for distribution in the eastern states for domestic consumption or for export abroad. The coastwise traffic was supplemented by large quanties of produce from the Upper Mississippi which were shipped by way of New Orleans to the Atlantic seaboard states. The East in return shipped all kinds of manufactured goods of both domestic and foreign production to the South. This trade was an important factor in the commerce of all the seaboard cities, and New Orleans, Mobile, Savannah, Charleston, Wilmington, Norfolk, Richmond, Baltimore, Philadelphia, New York, Newport, Boston, and Portsmouth became competitive shipping-points for the

[15] L. C. Gray, *History of Agriculture in the Southern United States to 1860* (Washington, 1933), Vol. II, chaps. xxxvi and xxxvii; Callender, *op. cit.*, pp. 296–97.

[16] Switzler, *op. cit.*, pp. 191, 192, 205.

[17] *Ibid.*, pp. 285–87; Johnson *et al.*, *op. cit.*, Vol. I, chap. xix.

collection and distribution of commodities destined for domestic and foreign consumption.[18]

The most significant feature of the commerce between the South and the East in the fifties was the diversion of a large volume of traffic from the sea to the railroads. The farm and mineral products of the Middle West which had formerly been shipped to the East by way of New Orleans were now shipped directly eastward over the new transportation routes which tapped the river markets.[19] The westward extension of the railroads in the South effected a further diversion of produce from the southern to the eastern routes, thus making it possible for the planters of South Carolina to secure by rail the food supplies from the West which had previously been shipped by water.[20] Another important feature of the commerce between the South and the East to be considered is the fact that the Mississippi River and the Atlantic Coast were both being paralleled by railroads which were already beginning to secure an increasing volume of both local and through traffic, thus indicating that the time was near at hand when the river and the coastwise trade would be relegated to an inferior position.[21]

[18] See *Hunt's Merchants' Magazine*, Vols. I–XLII (1839–60), for accounts of the rise of "commercial cities." Each volume contains an account of one or more cities which rose to commercial importance during this period.

[19] The steamboat and the eastern canals and railroads had already by 1850 begun to effect the diversion of some of Cincinnati's trade from New Orleans and other downriver ports to upriver ports and eastern markets (see DeBow, *op. cit.*, I, 253–54; II, 145).

[20] Louisville was connected by railroad with Nashville and Chattanooga; Chattanooga had two rail connections with the Atlantic seaboard: one, northeast via Knoxville and Lynchburg to Norfolk; the other, southeast via Atlanta and Augusta to Charleston and also via Atlanta and Macon to Savannah. The completion of the Memphis-Chattanooga railroad gave Memphis a direct eastern outlet to Charleston and Savannah.

[21] In 1850 nearly all the 475,702 bales of cotton shipped to the eastern mills were transported by the coasting vessels to the eastern seaports. In 1855 but 7,661 bales were shipped east on the railroads. By 1859 the overland movement had assumed considerable proportions, 106,678 of the 786,521 bales being transported to the eastern factories by rail (Joseph Nimmo, *Report on the Internal Commerce of the United States* [1879], pp. 122, 128).

The internal slave trade, although extensive, is omitted from consideration in this paper, since it was carried on wholly in the southern states. It may be observed,

The South exported a larger surplus than any other section of the country. It supplied the wants of the East and swelled the exports of the Union to impressive proportions. The shipments of cotton consigned to eastern mills in 1859 amounted to 760,000 bales valued at $40,000,000; Louisiana sent 280,000 hogsheads of sugar valued at $19,000,000; and the city of Richmond contributed tobacco to the value of $4,000,000.[22] It was estimated by Kettell that the East in 1859 purchased southern products of every kind for domestic consumption to the value of $200,000,000 while the value of southern commodities received by the East for export abroad amounted to $246,500,000, thus bringing the aggregate receipts of the East from the South to $446,500,000, which, it was observed, was "probably an undervaluation" of the products sent north by southern owners and producers.[23]

What did the East give to the South in exchange for this large volume of trade? Kettell divides the returns into four classes: domestic goods manufactured by the East, $240,000,000; foreign goods imported by the East, $106,000,000; interest, brokerage, freight, earnings, etc., $63,000,000; and southern travelers sojourning in the East, $53,560,000. This authority then goes on to make the following pertinent observations:

> This is a vast trade which approximates the sum of the dealings between the North and the South. The transactions influence the earnings, more or less direct, of every Northern man. A portion of every artisan's work is paid for by Southern means. Every carman draws pay, more or less, from the trade of that section. The agents who sell manufactures, the merchants who sell imported goods, the ships that carry them, the builders of the ships, the lumbermen who furnish the material, and all those who supply means of

---

however, that, while no statistics on the slave trade are available, Olmstead estimated in 1856 that more than 20,000 Negroes were sent annually from the border states of Virginia, Maryland, Delaware, Kentucky, Missouri, Tennessee, and North Carolina to South Carolina, Georgia, Alabama, Mississippi, Louisiana, Arkansas, and Texas, and that this trade approximated $30,000,000 a year (F. L. Olmstead, *The Cotton Kingdom* [1861], I, 58).

[22] Quoted from T. P. Kettell, *Southern Wealth and Northern Profits* (New York, 1860), in Callender, *op. cit.*, p. 281.

[23] *Ibid.*, p. 282. For a review of Kettell's book see *DeBow's Review*, XXIX (1860), 197–215. Kettell's statistics and conclusions are not altogether reliable and consequently need verification, although they are generally in accord with the established facts.

support to them and their families. The brokers, the dealers in Southern produce with the long train of persons who furnish them with houses, clothing, supplies, education, religion, amusement, transportation, and so forth, are dependent upon this active interchange by which one thousand millions of dollars come and go between the North and the South in a year.[24]

The commerce of the Middle West was the prize for which the South and the East contended.[25] This prize was first won by the

[24] Quoted from Kettell, *op. cit.*, in *DeBow's Review*, XXIX (1860), 206–7. William Gregg of South Carolina regretted that 40,000 southerners visited the North every summer and spent $12,000,000 while sojourning there (C. S. Boucher, "The Antebellum Attitude of South Carolina towards Manufacturing and Agriculture," *Washington University Studies* [4th ser.], III, Part II, No. 2 [April, 1916], 250).

"Preston Brooks calculated that in 1852, the South produced two-thirds of the exports, and collected but one-ninth of the duties on imports, four-fifths of which were expended in non-slaveholding States" (Ingle, *op. cit.*, pp. 109–10). "Northerners, not satisfied with the scant returns from agriculture, took to the sea, and the counting house, and found profit in being middlemen" (*ibid.*, p. 121). "The *Boston Post* was authority for the statement in 1859 that New England alone sold $60,000,000 worth of merchandise to the South in return for $50,000,000 worth of raw material; and that Boston received from the South $22,000,000 worth of cotton, $2,500,000 of tobacco, $2,500,000 of flour, $1,200,000 of corn, $1,000,000 each of wool, hides, and lumber and $500,000 of rice. . . . . One Richmond house spent $100,000 in 1850 for shoes from the North; and the *Southern Planter* estimated that in that year Virginia paid $500,000 for Northern brooms, and also bought many apples and much hay. The shipment of rice from Boston . . . . grew from 40,125 tons in 1848, for the South, to 110,000 tons in 1854" (*ibid.*, p. 127). "The basis of the export trade of the country was in the South. The great item in the commercial account was cotton. It constituted $29,674,883 of the $59,462,029 worth of domestic exports in 1830, $63,870,307 of the $113,895,634 in 1840, $71,984,616 of the $136,946,912 in 1850, and $191,806,555 of the $373,189,274 in 1860, these exports including large quantities of specie and, after 1850, bullion, principally from the North" (*ibid.*, p. 132). The South supplied $99,500,000 of $142,667,955 of domestic exports in 1849 and $196,801,876 of $335,894,385 in 1859. "Of the exports in that year $5,281,091 were classed as exclusively Northern, $57,502,305 as specie, $84,417,493 as from the North and South jointly, and $188,434,923 as exclusively Southern. Of the last $161,434,923 represented cotton, $21,074,038 tobacco, $2,207,148 rice, and $3,695,474 naval stores" (*ibid.*, pp. 132–33).

[25] Christy observed in 1856 that "This active commerce between the West and the South, however, soon caused a rivalry in the East, that pushed forward improvements by States and Corporations, to gain a share in Western trade. These improvements as completed, gave to the West a choice of markets, so that its farmers could elect to feed the slave who grows the cotton, or the operatives who are engaged in its manufacture. But this rivalry did more. The competition for western products enhanced their price and stimulated their more extended cultivation. This required an enlargement of the markets; and the extension of slavery became essential to Western prosperity" (quoted from D. Christy, *Cotton Is King* [1856], in Callender, *op. cit.*, p. 297).

South in accordance with the old theory that "trade will follow the rivers." The South and the West were bound together in interests, sentiments, and sympathies by the unifying agency of the Mississippi River system and by geographical separation from the Atlantic seaboard stages.[26] This transappalachian solidarity was threatened by the East when it entered into competition with the South for the trade of the Middle West by its extension of direct lines of transportation which diverted the traffic from the southern to the eastern routes, with the result that the West, no longer dependent on New Orleans as an outlet for the surplus products of its mines and fields, now looked to New York City. The interests of the West were united with those of the East while the bonds between the West and the South were weakened. The history of this struggle is the story of bitter rivalries between the Atlantic seaboard cities and New Orleans and in turn between the Atlantic seaboard cities themselves for the trade of the Middle West; it is the story of rivalries between cities of the Middle West for the control of this trade.[27]

New York City was isolated from the West until the Erie Canal, which Washington envisioned, was constructed.[28] The opening of this all-water route via the Hudson River to the West was an event of momentous consequence in American develop-

[26] Callender, *op. cit.*, pp. 290–301. The selections here given are from R. Mills, *Statistics of South Carolina* (1826), pp. 153–55; F. L. Olmstead, *Seaboard Slave States* (1856), pp. 378–79; Buckingham, *op. cit.*, pp. 203–4; Russell, *North America: Its Agriculture and Climate* (1856), pp. 265–66; J. Stuart, *Three Years in North America* (1838), II, 191, 239; and Christy, *op. cit.*, pp. 62–64, 137–38, 142–46, 159, 163.

[27] Andrews, *op. cit.*, pp. 234, 238–49, 240, 242, 243, 250, 261, 262, 269–70, 271, 273, 274, 275, 284, 285–86; Callender, *op. cit.*, pp. 326–37.

[28] *Hunt's Merchants' Magazine* may be consulted to advantage for accounts of the rise of New York City as the leading commercial metropolis of the East. When Washington, in 1783, proceeded up the Mohawk Valley to Fort Stanwix, the present site of Rome in New York, and thence over the route now occupied by the Erie Canal to the waters of Wood Creek which flow into Lake Ontario and thence to the sources of the Susquehanna, he observed: "Taking a contemplative and extensive view of the vast inland navigation of the United States, I could not but be struck with the immense diffusion and importance of it, and with the power of that Providence who had dealt his favor to us with so profuse a hand. Would to God we may have wisdom to improve them" (Andrews, *op. cit.*, p. 687).

ment comparable to the entry of the steamboat on the western rivers. It precipitated a flood of immigration into the Great Lakes plains, opened a direct line of transportation between the Middle West and the East, and made New York City the leading commercial metropolis of the country—a position it has since retained by virtue of water, rail, highway, and airway connections with the West. Prior to 1835 practically all the eastbound shipments originated in western New York, but by that time the construction of the Ohio canals began to make the surplus products of the Middle West available for the eastern markets. Buffalo became the gateway between the East and the West.[29] Then came a tide of grain with shipments of meat, dairy products, wool, and lumber from Ohio, Indiana, Michigan, Illinois, and Wisconsin.[30] The return trade consisted of manufactured goods of many kinds and exotic articles: textiles, boots and shoes, hardware, and machinery; paper, drugs, and medicines; sugar, molasses, coffee, and tea; tobacco, salt, and fish.[31] This direct trade gave rise to great commercial centers on the Great Lakes: Cleveland, Toledo, Detroit, Chicago, and Milwaukee as primary markets for the concentration and shipment of the grain and flour, the meat and dairy products, and the mineral and lumber products which swelled the export trade of the Middle West.[32]

The Atlantic seaboard cities—New York, Boston, Philadelphia, and Baltimore—became engaged in a desperate competition to reach the Middle West by the construction of east and west rail-

[29] *Eighth Census of the United States, 1860, Agriculture*, p. cxlix; Andrews, *op. cit.*, pp. 83–85, 236; *Hunt's Merchants' Magazine*, XXXVIII (1858), 689–702.

[30] *Hunt's Merchants' Magazine*, XXXI (1854), 403–13; XXXIII (1855), 314–16; DeBow, *op. cit.*, I, 447–53; Kettell, *Eighty Years Progress*, pp. 186–88; Callender, *op. cit.*, pp. 321–26.

[31] *Statistics of Foreign and Domestic Commerce* (Washington, 1864), pp. 133 and 181.

[32] The value of commerce of the Great Lakes, including the passenger traffic, amounted in 1846 to $63,164,910; of the western rivers, $183,609,725. The population dependent on the lakes as a means of reaching a market numbered 2,928,925; on the western rivers, 6,576,102. The number of hands employed in this commerce as mariners, exclusive of shore hands, on the western rivers was 25,114 (DeBow, *op. cit.*, I, 446).

roads.[33] These roads tapped the western rivers at many points and effected a diversion of traffic destined for the East or for export abroad from the southern routes to the eastern lines. It was estimated in 1845 that one half of the shipments of western produce to the Atlantic seaboard were sent to market by way of the canals, railroads, and other means of transportation to the East and the other half by way of New Orleans.[34] The lead trade of Iowa and Missouri was diverted from the river to the railroads by 1852.[35] The produce trade of Cincinnati, which had formerly been sent down the river for the East, was now sent in large part to Pittsburgh, or direct by rail to New York, or by canal to Cleve-

[33] Callender, *op. cit.*, pp. 326–37. "The progress and present condition of that wide agricultural territory of the west, stretching around the Great Lakes, and occupied by the United States, is of vital importance to our mercantile population. Colonized for the most part by emigrants from the east, its people are linked with us by ties of blood, by a community of interests as the citizens of one common country, by a common proprietorship in the soil, and by intimate and important commercial relations. It is well known that the greater portion of the merchandise of the west has ever been and will continue to be supplied from the eastern markets, so that the possession of what is denominated *the western trade* has already become an object of competition with our principal Atlantic cities; and the east in return is supplied by the staple western agricultural products. Should the country arrive at that period when these products are exported abroad, the eastern cities must be the depots of shipment for the produce of the west to foreign markets, as they now are and long will be the distributors into the interior, of all imported foreign goods. The arteries of western commerce will circulate the life-blood to the heart of our commercial metropolis [New York]. Every pulsation of that heart is felt to the remotest borders of the west. . . . . The northwest must necessarily, from its local circumstances, become in future time the great granary of the republic, because it possesses the largest amount of arable soil capable of producing the most bountiful returns with the least labor, and those products may, under its projected means of intercommunication, be brought rapidly into a ready market" (*Hunt's Merchants' Magazine*, III [1840], 22, 40).

[34] Switzler, *op. cit.*, 210–12.

[35] "In 1852 the lead trade from Galena and Missouri, which had formerly passed through New Orleans, was lost to it, the railroads having made through connections with Galena. The receipts of lead at New Orleans had reached a maximum of 785,495 pigs in 1846, and had averaged nearly 600,000 pigs for the previous half-dozen years. It sank suddenly, and in 1856 was but 18,291 pigs, and soon after it disappeared altogether from the commercial records of New Orleans, being an item too small for consideration. This trade, however, was merely a transit one, the shipments being through New Orleans as the cheapest route to New York and Europe. In 1852 that route was no longer the cheapest, the railroads under-bidding it" (*ibid.*, p. 212).

land, Buffalo, and thence to the Hudson River for Boston and New York.[36] St. Louis occupied a strategic position.[37] It was the center of concentration for the farm products of Missouri, Illinois, and Iowa which were shipped down the river; a distribution center for manufactured goods from the East and the staple products from the South; a transshipment point for western produce to the East when rail connections were established in 1856; and a point of departure and arrival of the growing overland trade to the Far West. Pittsburgh was the leading manufacturing city and commercial emporium of western Pennsylvania. It occupied a commanding position on the upper Ohio River and in the midst of the great coal area. It shipped its manufactures of iron, glass, and cotton to the South and West, receiving in turn western produce and southern staples, a large portion of which was sent

[36] The destination of specified articles shipped from Cincinnati for the year 1850–51 is presented in DeBow, *op. cit.*, I, 253–54. The southern trade of Cincinnati was still very important in 1860, as shown by the fact that the South continued to take more than half of the exportable surplus of a number of specified commodities: 71 per cent of the candles, 73 per cent of the cooperage, 85 per cent of the furniture, over 60 per cent of the sundry merchandise, 63 per cent of the whiskey, and more than 50 per cent of the iron castings. On the other hand, the South took only 11 per cent of the boots and shoes, 19 per cent of the flour, and 16 per cent of the merchandise in packages. But the South took 54 per cent of the pork packed in barrels, nearly half of which was for home consumption while the remainder was exported (C. R. Wilson, "Cincinnati, a Southern Outpost in 1860–1861," *Mississippi Valley Historical Review*, XXIV [1938], 480, 481).

"The number of hogs cut up in the valley of the Mississippi will reach, for recent years, as an average, one million seven hundred thousand; of this, ... twenty-eight percent, or over one-fourth of this whole quantity, is put up for market in Cincinnati alone" (DeBow, *op. cit.*, I, 379). Cincinnati became an important pork-packing center about 1833. "Porkopolis," as it came to be known, was characterized by DeBow as "the most hoggish place in all the West."

[37] The importance of St. Louis as a commercial emporium is reviewed in *Hunt's Merchants' Magazine*, IX (1843), 154–60. The leading articles of export consisted of lead, tobacco, furs and peltries, hemp, pork, bacon, lard, flour and wheat, horses and mules, hogs and cattle, potatoes, and cod; while the imports from the East consisted of hardware, chinaware, cotton, woolen, and linen goods, wines and liquors. One hundred and fifty steamboats were employed in the St. Louis trade. The exports from St. Louis to New Orleans by steamboats, keelboats, and flatboats consisted of flaxseed, tobacco, wheat, whiskey, shot, hides, hemp, castor oil, corn meal, buffalo robes, beeswax, rope, butter, baggage, beans, furs and peltries, green fruit, dried fruit, tallow, bacon, beef, dried corn, lard, lead, oats, potatoes, onions, and cattle.

to Baltimore and Philadelphia, with the proceeds of which it purchased cotton, woolen, and leather manufactures, and other articles of the East and foreign countries to supply its own needs and the needs of a large part of the country.[38] Cincinnati was about to lose the leadership as a pork-packing center which was soon to pass to Chicago;[39] while Chicago and St. Louis became the leading competitors as concentration and distribution points for western trade.[40]

The diversion of the grain trade from the southern to the eastern routes constitutes one of the most important features of the internal commerce of this period. As stated in 1860 by the superintendent of the United States Census:

> The artificial channels of trade, canals and railroads have tapped the west and carried its products eastward across the continent. The grain trade of Illinois, Iowa, Missouri, Wisconsin, and even the greater portion of that of Indiana and Ohio, have been limited almost entirely to the lakes, the Erie Canal, the St. Lawrence River, or the six great trunk lines of railroads that lead from the heart of the west to the seaboard. The Mississippi River

[38] *Ibid.*, X (1844), 322–26. "Pittsburgh sends her manufactures of iron, glass, cotton, etc., throughout the vast extent of country bordering on the Ohio and Mississippi rivers, as well as to the rapidly improving region extending along the lakes. In return are received drafts on the Atlantic cities or New Orleans, or the varied produce of the several states, viz.: pork, lard, butter, hemp, tobacco, cotton, sugar, molasses, etc; together with a large part of her supply of coffee, imported at New Orleans. A portion of the above named articles, as pork, lard, flour, hemp and tobacco, is reëxported from Pittsburgh to Baltimore; and a larger portion finds a market in Philadelphia, for home consumption or exportation. With the proceeds of the sales of these articles, and of large quantities of flour and wool, the produce of western Pennsylvania, together with drafts on the Atlantic cities received from sales to the west, she purchases in the Atlantic cities, for the consumption of her own citizens or the supply of a large extent of country in western Pennsylvania and Ohio, the cotton, woollen and leather manufactures, the bonnets, and other articles, the manufactures of New England, and various foreign ports; that is manufactures of wool, silk, cotton, linen, steel and other metals; porcelain and earthen wares, tea, spices, dried fruit, wine, brandy, etc." (*ibid.*, p. 323).

[39] "In 1850–1851 Chicago stood thirteenth in size of packing output, with a pack of 20,000 hogs. By the 1855–1856 season, it stood fourth, with a pack of 80,380 hogs. In the 1860–1861 season it stood second, with a pack of 271,805 hogs, and in the 1861–1862 season, it nearly doubled again, to secure first place, with a pack of 505,691" (Leavitt, *op. cit.*, p. 82).

[40] Schmidt, *op. cit.*, pp. 109–16; *Eighth Census of the United States, 1860, Agriculture*, pp. cxlix, clvi.

has been bridged at Rock Island, and another bridge is just being completed at Clinton, farther up. The lines of railroads which extend from Lake Michigan to this river are being pushed forward with great rapidity to the Missouri River, and into Kansas and Nebraska, and there is every probability that the grain of these frontier states will also find a market by way of the lakes. Even now grain is being received at Chicago from Kansas and Nebraska *via* the Missouri River, the Hannibal and St. Joseph Railroad, and the Chicago, Burlington, and Quincy Railroad. As an outlet to the ocean for the grain trade of the west, the Mississippi River has almost ceased to be depended upon by merchants.[41]

The rapid growth and diversion of western produce from the southern to the eastern routes is reflected in the commercial statistics of the primary and seaboard markets.[42] Chicago rose from a city of less than five thousand inhabitants in 1840 to a metropolis of more than a hundred thousand people in 1860, exporting annually nearly $50,000,000 worth of wheat, flour, corn, livestock, pork, beef, wool, whiskey, and other products.[43] New York City, isolated from the West before 1830, rose to commanding importance as the great emporium of the East for western produce. Its aggregate receipts by the three routes—the Erie Canal, the New York Central Railroad, and the New York and Erie Railroad—amounted in 1860 to 2,305,321 tons valued at $160,907,778, which was about equal to the value of the cotton crop for the same year.[44] The receipts of western produce at tidewater over the Pennsylvania and the Baltimore and Ohio railroads brought the value of the tidewater receipts over the eastern lines to more than $200,000,000.[45] The grain receipts over these lines amounted to 85,000,000 bushels, while the receipts of New Orleans amounted to 5,687,399 bushels. The receipts of animal food at tidewater amounted to 525,000 tons; at New Orleans, to 95,700 tons.[46] The exports of provisions and breadstuffs from New York City in

[41] *Ibid.*, p. clvii.

[42] *Ibid.*, pp. cxxix–cxxxiv and cxliv–clxix.

[43] *Hunt's Merchants' Magazine*, XXXVI (1857), 565–70; XXXIX (1858), 420–30.

[44] Quoted from Daniel Lord, *The Effect of Secession upon the Commercial Relations between the North and South* (1861), pp. 37–38, in Callender, *op. cit.*, pp. 342–43.

[45] *Ibid.*, pp. 343–44.

[46] *Ibid.*, p. 343.

1860 amounted to $21,200,000, while the exports of New Orleans amounted to only $1,200,000.[47]

The comparative advantages of the eastern over the southern routes in the competition for the commerce of the Middle West led DeBow to declare in a speech at Nashville in 1850 that northern "energy, enterprise, and an indomitable spirit had rolled back the mighty tide of the Mississippi and its ten thousand tributary streams until their mouth, practically and commercially is more at New York and Boston than at New Orleans."[48] The advantages in favor of the eastern routes as reported in 1860 were: the uncertainties of river navigation and the vexations and ruinous delays that occurred in consequence; the risk of damage to grain and flour shipped during the summer months through the southern latitudes; the speedy transportation by the safer and more economical canals and railroads as compared with transportation by river to New Orleans, and thence by ocean ships around the Atlantic Coast; the superior advantages of New York City as an importing and exporting center; and the rapid growth of the cotton, sugar, and tobacco trade of New Orleans to the exclusion of almost every other branch of commerce.[49]

The old theory that "trade will follow the rivers" was disproved. Southern leaders became keenly conscious of this fact and urged that the South be aroused to the situation. The Memphis Convention of 1845, over which John C. Calhoun presided, emphasized the importance of the river trade and urged that the improvement of the navigation of the western rivers was a proper subject for federal legislation.[50] New Orleans launched a campaign of education to provide facilities for the retention of the trade of the Upper Mississippi Valley.[51] Railroads linking the sea-

[47] *Iowa Homestead*, October 16, 1863, p. 2. [48] *Op. cit.*, II, 484.

[49] *Eighth Census of the United States, 1860, Agriculture*, p. clvii.

[50] DeBow, *op. cit.*, II, 81–82; Herbert Wender, *Southern Commercial Conventions, 1837–1859* ("Johns Hopkins University Studies in Historical and Political Science," Vol. XLVIII, No. 4 [1930]), chap. iii: "The Calhoun Convention."

[51] E. P. Puckett, "The Attempt of New Orleans To Meet the Crisis in Her Trade with the West," *Proceedings of the Mississippi Valley Historical Association*, X (1918–19), 481–95.

DeBow inaugurated his *Review* following a convention designed to advance the

board South with the Middle West were proposed[52] and direct trade with Europe was demanded.[53] DeBow and others urged the South to industrialize and to patronize home industry.[54] Some progress was made in these directions, but it was slow compared with the rapidly advancing East and West. But all to no avail. Economic reorganization and adjustments were postponed by the Civil War and its aftermath to the end of the century.

There was another stream of internal commerce which began to be developed during the period: the commerce between the Mississippi River and the Far West.[55] First came the fur trade. By 1840 practically all the western fur-bearing country had been exploited. The value of furs received annually at St. Louis amounted approximately to $259,000; at New Orleans, about $480,000.[56] The Sante Fé trail became the great highway of commerce with the Southwest after the establishment of Mexican independence in 1821.[57] By 1860 the total value of merchandise transported by regular freights—the white-topped "prairie

---

South. He observed that the purpose of the *Review* was to revive the commercial spirit that had been dead in the South for so many years. He attributed the condition of the South not to the lack of capital but to the absence of enterprise. In 1857 he wrote: "The truth is, it is impossible to rouse the Southern people on any subject whatever of enterprise; and the sooner we admit it, and ground our arms, the better" (*DeBow's Review*, III, 97, 107; XII, 119).

[52] DeBow, *op. cit.*, II, 452–56.

[53] "Two-thirds of the shipping built in 1857 was owned north of Maryland; in the same year, while the South supplied at least half of the exports, it handled less than one-seventh of the imports" (Ingle, *op. cit.*, p. 96). Cf. DeBow, *op. cit.*, III, 1–13, 92–120; Wender, *op. cit.*, pp. 133–36, 159–60; and see also R. R. Russell, *Economic Aspects of Southern Sectionalism, 1840–1861* ("University of Illinois Studies in the Social Sciences," Vol. XI, Nos. 1 and 2 [1924]).

[54] See a series of brief articles on "Southern Patronage to Southern Imports and Southern Industry," in *DeBow's Review*, XXIX (1860), 77–83, 226–32, 494–500, 623–31, 771–78. See also Ingle, *op. cit.*, chap. iii: "Phases of Industry," which gives a survey of industrial development in the South in the ante-bellum period, showing the possibilities of further development, if only initiative and enterprise to promote manufacturing were provided. Cf. DeBow, *op. cit.*, II, 107–21, 130–31.

[55] E. L. Bogart, *Economic History of the American People* (2d ed., 1935), p. 350; *Hunt's Merchants' Magazine*, XXXVIII (1858), 353.

[56] Switzler, *op. cit., 1889*, p. 563; *Hunt's Merchants' Magazine*, XI (1844), 475.

[57] Switzler, *op. cit., 1889*, pp. 565 and 566.

schooners"—to New Mexico amounted to $3,500,000, which was paid for with bullion, wool, or with money received from the sale of sheep driven to California.[58] The Mormon settlements in Utah opened up another avenue of trade after 1848.[59] The mining camps of the West called for supplies which were freighted across the plains; but there was no overland freight traffic between the Mississippi Valley and the Pacific Coast. By 1860 the value of merchandise freighted west of the Missouri River amounted to $10,500,000.[60] The center of this trade was Kansas City.

The rapid rise and growth of the internal commerce of the United States from 1815 to 1860 was accompanied by a relative decline of the foreign trade. It was estimated by R. J. Walker, secretary of the treasury, in his report for 1847–48 that "the value of our products exceeds three thousand millions of dollars. . . . . Of this $3,000,000,000 only about $150,000,000 are exported abroad, leaving $2,850,000,000 at home, of which at least $500,000,000 are annually interchanged between the several states of the Union."[61] I. D. Andrews in his report for 1851–52 estimated the value of internal commerce at $1,461,000,000 divided as follows: commerce on the Great Lakes, $157,000,000; on the rivers, $170,000,000; on the canals, $594,000,000; and on the railroads, $540,000,000.[62] It will be noted that Andrews gave no estimate of the value of traffic on the highways; consequently, his figures do not include products consumed at home or entered into local trade. The annual value of internal commerce, excluding the local trade, probably approximated $1,500,000,000 by the close of the decade of the fifties. The American people were absorbing a larger proportion of the total annual production. Colonial dependence on Europe was diminished. The nation was becoming economically more independent of Europe.

What, then, is the importance of the rise and growth of internal commerce during the antebellum period of American history? Is it an important event or not? Is it merely of passing

[58] *Ibid.*, *1890*, p. 853.

[59] *Ibid.*, pp. 123, 124, 373, 853.

[60] Bogart, *op. cit.*, p. 350.

[61] Andrews, *op. cit.*, p. 687.

[62] *Ibid.*, p. 905.

interest to the historian, the statistician, and the economist? What bearing does it have on the relations between the sections; on the relations between agrarianism and industrialism; on the development of national economy? These questions go to the very heart of the problem, and they cannot be answered without taking into consideration the economic conditions of the country as a whole and the changes that internal commerce effected in the life of the American people. The traditional treatments of this subject are largely of an analytical and descriptive character which deal with limited aspects of the problem. Callender has pointed out the nature and importance of the problem and has suggested the lines of inquiry. There has been no attempt, however, to synthesize the several streams of commerce and to interpret the meaning of the whole pattern. What is the significance of the facts that have been presented?

The significance of the rise and development of internal commerce during the period before 1860 lies in the fact that it marks the introduction into American life generally of the practice of the division of labor which Adam Smith urged as the most important factor contributing to the ability of a community to produce wealth.[63] The division of labor refers to two distinct yet closely related lines of development: (1) the separation of laborers of a region into distinct occupations or industries and (2) a territorial division of labor based on regional differences and aptitudes. One is intraregional; the other is interregional. These features of American economic life had not been developed to any considerable extent before 1815, except in the tidewater areas where it was possible, owing to the existence of domestic and foreign markets, for a large number of people to devote their labors to a few industries for which they had an abundance of natural resources and to depend on the labor of others to produce whatever else they required. The absence of markets in the back country—the hinterland—compelled each family to produce most of what it consumed, exchanging a very small amount of produce with other families of the same region. There were no towns over the

[63] *The Wealth of Nations* (1776), Book III, chap. iii.

larger part of the country. Division of labor was practically unknown over considerable areas. This does not mean that families were entirely self-sufficient, for there was always some trade which enabled each household to produce a surplus which was exchanged for necessities and comforts or sold for cash to pay taxes. As trade developed, towns sprang into life with division of employment, and self-sufficiency gave way to interdependence between town and country; between the sections as markets were expanded and transportation facilities were developed.

The rise of internal commerce after 1815 made possible a territorial division of labor between the three great sections of the Union—the West, the South, and the East. The markets which were developed for various products opened the way for the division of labor in regions where it had been practically unknown before. Each section tended to devote itself more exclusively to the production of those commodities for which it was best able to provide. There was fostered a mutual economic dependence between sections and the establishment of predominant types of industry in each which were in turn dependent on foreign commerce. The South was thereby enabled to devote itself in particular to the production of a few plantation staples contributing a large and growing surplus for the foreign markets and depending on the West for a large part of its food supply and on the East for the bulk of its manufactured goods and very largely for the conduct of its commerce and banking. The East was devoted chiefly to manufacturing and commerce, supplying the products of its industries as well as the imports and much of the capital for the West and the South while it became to an increasing extent dependent on the food and the fibers of these two sections. The West became a surplus grain- and livestock-producing kingdom, supplying the growing deficits of the South and the East.[64]

[64] It should be emphasized again that the South became the first market for the produce of the Middle West, while the reopening of the British West Indian trade in 1830 and the repeal of the English Corn Laws gave rise to an important export trade; but it was the rise of manufacturing and the growth of an industrial population in the East that supplied the principal market for western agricultural products. To what extent the tariffs of 1824 and 1828 promoted the growth of manufacturing in the United States has been a debatable question. The influence of this legisla-

The triangular character which internal commerce had assumed by 1830 was analogous to the triangular maritime commerce before the American Revolution. The West purchased more from the East than it sold to that section, whereas its sales to the South exceeded the purchases from it. The South bought most of its manufactured goods from the East in exchange for its staple products, the bulk of which was exported to Europe. This created an intersectional indebtedness, the West paying for its manufactures from the East with its sales to the South in somewhat the same manner that New England paid for its manufactures from the mother-country during the Colonial period by the sales of its commodities to the West Indies.[65] This triangular trade was at first a lopsided or unsymmetrical trade that moved in one general direction down the Mississippi to New Orleans, eastward and northeastward along the Gulf and Atlantic seaboard to the northern seaports, and westward into the Ohio Valley and the Great Lakes region. The entry of the railroads into the West in the fifties modified this pattern by diverting western products from the South to the East. Increased market demands and the extension of improved water and rail transporta-

---

tion has been exaggerated (see F. W. Taussig, *The Tariff History of the United States* [8th ed.; New York, 1931], Part I, chap. ii). It may be noted that manufacturing continued to expand rapidly after the tariff was reduced to almost a revenue basis. Granting the influence of the tariffs of 1824 and 1828 on the development of manufacturing, the tariffs of 1846 and 1857 were governed more by considerations of revenue. Consequently, the complaints of southern leaders that the tariff was responsible for their commercial ills had little or no validity.

[65] "The proceeds of the Southern crops came North simply *to pay Southern debts*. Take an illustration of this on a grand scale. Every year the value of merchandise going West over the Erie Canal, New York Central and Erie Railroads exceeds that coming East over the same routes by $100,000,000. This is a puzzle to many persons who do not reflect upon the course of trade in this country. They look upon the enormous excess of western-bound freight as a proof of the extravagance or unsoundness of the West. It is simply the process by which that section gets pay for the products which it sells to the South. These debts cotton pays. The Northern shipper takes it to Europe, brings back the proceeds, which are distributed by Northern merchants and factors to the creditors of the South, throughout the length and breadth of the land. It is not convenient for the West to receive its pay through Norfolk, or Charleston, or Savannah, or New Orleans, but through *Northern cities*, and over interior routes of communication" (quoted from Lord, *op. cit.*, in Callender, *op. cit.*, p. 289).

tion facilities brought the three great sections of the country into a closer and more interdependent economic relationship.[66] Regional specialization was intensified, and the triangular or circular pattern of internal commerce gave way to a more direct exchange of commodities between the agrarian South and West and the rising industrial East. Had the nature and significance of this interdependent relationship been better understood, the South, the West, and the East each might well have continued on their respective courses of development, sectional differences might have been settled in the natural course of economic evolution, and the Union might have been preserved without recourse to arms. Led by agitators, time-serving politicians, and mercantilists who overcame the more conservative plantation and farming groups, the agrarian South and the industrial East supported by the food-producing West drifted into a conflict which was not "irrepressible."

[66] This interdependence was emphasized by *Hunt's Merchants' Magazine*, XLIII (1860), 442.

POST-WAR CONCENTRATION IN THE CHEESE INDUSTRY*

WILLIAM H. NICHOLLS
Iowa State College

So economists observe, a firm
Has larger firms that on it prey;
And these firms have larger still to bite 'em,
And so proceed, ad infinitum.

—After JONATHAN SWIFT

THE twenty years following the war of 1914–18 have seen marked changes in the marketing of manufactured dairy products. Because of this fact, most of the literature on the subject, based largely on conditions before 1918 or 1920, is now out of date. In recognition of this gap in our present marketing picture the writer recently published a discussion of the post-war developments in the marketing of cheese.[1] The present paper, based on this investigation, is a case study in monopolistic competition. It traces the shift in cheese from an unstandardized bulk product to one in a form well adapted to extensive product differentiation and advertising. The causes of post-war concentration in the industry, the most important of which were patents on the new "processed" cheese, are considered. Evidence of oligopolistic behavior both in the sale of the processed product and in the purchase of the bulk cheese is presented. The recent quantitative importance of the various cheese-marketing channels is estimated, and the forces bringing about a trend toward more direct marketing analyzed. The paper concludes with the consideration of a few broader questions of social policy suggested by the patent situation in the cheese industry.

* This article will be filed as Journal Paper No. J-686 of the Iowa Agricultural Experiment Station, Ames, Iowa. Project No. 383.

[1] William H. Nicholls, *Post-war Developments in the Marketing of Cheese* (Iowa Agric. Exper. Sta. Res. Bull. 261 [June, 1939]). See also Nicholls, *Post-war Developments in the Marketing of Butter* (Iowa Agric. Exper. Sta. Res. Bull. 250 [February, 1939]).

I

In 1918 the four largest meat-packers were the only large-scale distributors of cheese. Armour, Swift, Cudahy, and Wilson together handled 48.5 per cent of the nation's cheese, practically all of it moving direct to retail channels. The two leading marketing co-operatives in Wisconsin and Oregon, although showing healthy growth, together handled only 3.5 per cent, most of which was sold to the packers or regular terminal wholesale outlets rather than direct to wholesale grocers or retail stores. The rapidly growing chain-store organizations still depended almost altogether on regular wholesale channels. Packaged processed cheese was, as yet, of little importance, almost all cheese reaching the consumer in its original bulk form. About one-half of the country's cheese probably still moved through independent terminal wholesalers and wholesale grocers to retailers. The price was commonly based on the quotations established on the small number of call boards in Wisconsin and New York State. The cry of a cheese monopoly already was being raised—chiefly against the meat-packers—and the practices of the dealers operating on the cheese boards were such as to cast reflections on their accuracy as true barometers of cheese prices. Such was the marketing picture in 1918.

The most important development in cheese marketing in the immediate post-war period was the beginning of the rise to popularity of packaged processed cheese.[2]

What were the important factors leading to this popularity? Packaging cheese was part of a wider trend toward packaging all food products. There was an increased demand for food free from contamination during storage and distribution. Furthermore, apartment living was changing family habits from larger bulk purchases to more frequent purchases in small quantities.

The grocer also favored packaged goods, since his losses on overweight were less and time was saved in waiting on customers. Since bulk cheese often "huffed up" or molded in the summer, many groceries in the central and southern states refused to

[2] Essentially the process of assorting cheese, grinding and pasteurizing the mixture, and, while the plastic cheese is hot, dropping it into the final foil-lined containers, in which it is immediately sealed.

handle it during warm weather. Cheese in foil-covered loaves packed in tight boxes remedies these conditions in spite of poor refrigeration. Unlike bulk cheese, which dried up, cracked, and crumbled, causing waste to both dealer and consumer, packaged cheese was not exposed to the air in the retail store, and the consumer could keep it without deterioration for a considerable time.

From the manufacturer's standpoint, packaged cheese lent itself for the first time to extensive product differentiation through style of package, branding, and advertising.

The result of this trend was to make a large part of bulk cheese a raw material for the processor rather than a consumers' good, removing the local factory even farther from the consumer.

The widespread acceptance of processed cheese during the early twenties, in spite of what was often a rather pasty body and cooked flavor, is to a large degree a testimony of the hopelessly inefficient marketing of bulk cheese at that time. Manufactured in hundreds of small crossroad factories, the bulk cheese was largely thrown on the market in a "green" state, because local organizations could not afford to hold it until it was properly cured. As a result, it frequently reached the consumer in a tasteless, rubbery condition. On the other hand, if an endeavor to cure it was made, it seemed—especially in contrast—too strong. All in all, it was extremely lacking in uniformity. Processed cheese, however, made by a careful blending of cured and green cheeses,[3] was a uniform product, further suited to the American consumer's taste since pasteurization or cooking usually arrested further bacterial action, an assurance against strong cheese.

As consumption shifted from bulk cheese to various forms of packaged loaves, the original cheese moved in ever growing quantities direct to large processors rather than through the old-line wholesale channels which had previously been important. Better-cured stock was reported to be in strong demand by processors. The smaller types of bulk cheese gained favor over larger types as competitors of the new product. By 1926 the percentage of the

[3] A typical blend might consist of 40–50 per cent of mild-flavored, medium-aged cheese; 10 per cent of high-flavored, old cheese; and the remaining 40–50 per cent of younger cheese.

nation's cheese reaching the consumer in processed form was assuming significant proportions.

Chain-store organizations were growing rapidly and helped to bring about a narrower margin between wholesale and retail prices. Some of the chains, as they attained great size, began to discontinue or to curtail their purchases of cheese from old-line wholesalers, going directly to the producing areas for their supplies and setting up their own direct-buying departments. The increasing importance of processed cheese, however, probably prevented this type of integration from proceeding as far as it would have, had processed cheese not developed. As a result the chains still depended a good deal upon processors and packers for their supplies.

The marked trend toward processed cheese brought a number of processors into the field, the status of the patents on the process still being in doubt. This relatively competitive situation was serving to reduce the margin of profit and to discourage further entry. The Kraft Cheese Company and the Phenix Cheese Company were the chief contestants in the race for supremacy, both companies showing remarkable growth between 1918 and 1926. The leading meat-packers were also beginning to recognize the opportunities in packaging and branding their cheeses.

The two main co-operative marketing agencies had shown marked growth by 1926. Neither performed many functions beyond the assembling stage, however. The large Wisconsin federation found its chief outlets among the large-scale packers, processors, and chain stores. The co-operatives were handicapped by the trend toward processed cheese, since the uncertainty of the patent situation and inadequate financial facilities kept them out of this promising field. Three marketing co-operatives, including a new one formed in New York in 1921, handled 10.3 per cent of the nation's cheese in 1926.

The old-line wholesalers, already facing difficulties as a result of declining volumes of butter,[4] were beginning to feel additional pressure due to the similar marked trend toward direct-buying of

[4] Nicholls, *Post-war Developments in the Marketing of Butter*, pp. 329–36.

cheese, especially by the processors and chain stores. In the sale of bulk cheese, chain stores were now diverting large amounts from the old wholesale channels, which had always been of considerable importance to the independent retail trade. Processed cheese still moved to an important extent through wholesalers, although the development of a standardized, branded product foretold the decreasing need for the wholesalers' once-vital functions of grading, standardization, and reselection. The result of these forces, in both butter and cheese, was the reduction in the number of wholesale houses.

The price was still based on call-board quotations, of which only four were made in 1926, compared with twelve in 1912. Opinions on the validity of the Wisconsin quotations differed, but the quotations of the "committees" on the two New York boards were generally questioned. Declining wholesale receipts of cheese at New York City were forcing the leading private price-reporting agency to question its own quotation on New York State cheese.

II

The years 1927–30 were the most important of the post-war period, for during these years the problem of patents came to a head, bringing widespread combination and concentration of distribution in its wake. The Pabst case[5] established the validity of the Kraft and Phenix patents in 1927 and the legal right of these companies to exact a toll in the form of a royalty from all competitors who produced and sold processed cheese. Even the mighty forces of Swift and Company bowed to these claims. These patents were no doubt instrumental in preventing the chain stores from doing their own processing and from integrating to an even greater extent from country to consumer in the assembly and distribution of both processed and bulk cheese. Kraft held the basic patents on the pasteurizing process as applied to cheese; Phenix, those on packaging the plastic material; and Lakeshire, those on the continuous process cooker. The natural result was the merger of Kraft and Phenix in 1928, a merger in which the

[5] *Kraft Cheese Co.* v. *Pabst Corp.*, U.S. District Court, Eastern District of Wisconsin, decision filed February 23, 1927.

monopolistic motive apparently far outweighed any possibilities of economies of large-scale operation.

Thus, we find the prospectus of the newly formed corporation pointing out (my italics) that

> . . . . *the consolidated organization, which of itself reduces competition, is in a dominating position through control of the basic patents for pasteurizing and preserving cheese of uniform quality.* Important court decisions have confirmed this and practically all manufacturers using these methods are now operating or will shortly be operating under licenses. A substantial revenue will be received by the company this year from royalties. The company has placed in effect *a system of so-called controlled distribution of its products* which will reduce the substitution of other brands of cheese.[6]

Branding and packaging were strongly emphasized. Large-scale advertising brought increased sales. In 1927 Kraft was already supplementing the work of wholesale grocers and jobbers by establishing its own wagon distributors to prevent the substitution of other brands and to help independent jobbers to sell more Kraft cheese. With the merger of Kraft and Phenix, the newborn Kraft-Phenix Cheese Corporation acquired a number of distributing companies and began to serve the retail trade directly. While exercising rigorous control over those independent jobbers through whom they continued to distribute, their own wagon distributors became still more important.

In 1928 Kraft-Phenix began an extensive program of diversification and by the end of the year was producing and distributing sweet cream, butter, ice cream, fluid milk, and mayonnaise in addition to cheese. In 1930 Kraft-Phenix was in turn acquired by National Dairy Products Corporation, which wanted this extensive cheese business to round out its position as leader in the field of dairy products. The Borden Company bought the only other basic patent-holder in the processing of cheese, Lakeshire. By 1930, then, all the basic patents were in the hands of the two largest dairy corporations of the country, after a three-year period of phenomenal expansion and concentration in the dairy industry.

Among the large corporations which gained a dominant posi-

[6] Prospectus of Tobey and Kirk of the New York Stock Exchange, quoted in *New York Produce Review*, April 18, 1928, p. 1122.

tion through patent consolidations were the American Tobacco Company, American Steel and Wire, United Shoe Machinery, Eastman Kodak, Standard Oil, General Electric, Westinghouse, and Bell Telephone.[7] Kraft-Phenix undoubtedly may be added to this list, since the basic nature and the broad claims of the patents these two companies held were enough to give them, when combined, a virtual monopoly on processed cheese, at least for the duration of their present patents.

The Wisconsin Cheese Producers' Federation had grown considerably by 1930, handling 8.4 per cent of the nation's cheese in that year. It was financially weak, however, and still found its chief outlets with chain stores, packers, and processors. In 1930 the Federal Farm Board recognized it as a regional sales agency and granted it a large loan to enable it to finance storage and merchandising operations. The Oregon and New York co-operatives had shown little further growth. The three handled 10.4 per cent of the nation's cheese in 1930, compared with 10.3 per cent in 1926.

By 1929 about 14 per cent of all American (Cheddar) cheese reached the consumer in processed form, and the processing margin was apparently quite wide. As increasing volumes of cheese reached the final consumer in packages, the old-line wholesaler-wholesale grocer channel of distribution was rapidly declining in importance. Most of the cheese which moved this way reached the consumer in bulk form as of old; but even here the increasing volumes handled by packers, chain stores, and co-operatives diverted an enormous share from the old channels. With the increasing concentration of interests in the cheese industry the validity of the Wisconsin Cheese Exchange quotations was still more in doubt as the period closed.

III

By the early part of 1931–38 large-scale sales promotion of processed cheese in attractive packages was showing very marked results. Processed cheese expanded from an equivalent of 13.9 to 40.5 per cent of American Cheddar cheese production between

[7] Floyd L. Vaughan, *Economics of Our Patent System* (1925), pp. 74–100.

1929 and 1931 and reached over 50 per cent by 1937. Processing margins were very wide in 1929–31 but narrowed markedly in 1932–37 with a further rise in the relative importance of processed cheese.

National Dairy Products Corporation (Kraft-Phenix) is still by far the largest distributor of cheese, although its handlings relative to domestic cheese production dropped sharply from 47 to 32 per cent in 1932–34. It still buys most of its bulk cheese, only 15 per cent being produced originally in its own factories. National Dairy expanded considerably between 1930 and 1936, during which time it acquired sixty-two additional companies, about one-third of them for its cheese division.

Borden, the second largest dairy corporation, showed little tendency to expand after 1930. In 1934 it was the fourth largest cheese distributor (9.3 per cent of domestic production), probably second to Kraft-Phenix in volume of processed-cheese sales. Kraft-Phenix and Borden held the basic patents on processed cheese. Considerable evidence exists of their nonaggressive price policies, which took the form of exchange of information and "co-operation" with competitors, strict control of resale prices, and a philosophy of "live and let live." Thus the Federal Trade Commission found in 1936 that Kraft-Phenix "kept close check on chain-stores handling its product in an effort to see that prices were maintained. Sales were discontinued to customers who did not maintain resale prices."[8] That Borden "co-operated" with its closest competitors is revealed by correspondence which the Federal Trade Commission found in the files of that company recently, a few excerpts of which follow:

> You can save us a lot of trouble if you will go out of your way a little and talk to Kraft's man in that market once in a while. *Just a little sane and civil co-operation between manufacturers' representatives will go a long way toward keeping harmony in a market. . . . . Successful handling of a market makes it imperative that you co-operate with your competitor to a certain extent. . . . .* Under no circumstances do we want you to discuss or agree to anything that may be termed *illegal, but sit down and talk your problems over.* The chances

[8] Federal Trade Commission, *Sales and Distribution of Milk in the New York Sales Area* (1936), p. 5.

are that Kraft's man up there is very human like yourself, and each of you can be a big help to the other without revealing any professional secrets and without incurring any criticism from headquarters.[9]

That each of the leading companies was too large to ignore its own influence on cheese prices is clearly indicated by the recognition of the necessity of "sane and civil co-operation." This was probably especially marked in packaged loaf cheeses, since Kraft-Phenix and Borden, between them, held a great competitive advantage as the sole patent-holders of the process from which such loaves emerged. Such "co-operation" requires strict retail-price maintenance, since the retailers make the final sale to the consumer.

In the summer of 1935 a flurry appeared in the loaf-cheese market that apparently made the leaders in the industry realize the futility of price competition. A Borden memorandum clearly reveals this:

We are determined to do our part in correcting the loaf-cheese selling situation and *we want every distributor followed very closely and instructed to hold strictly to our retail selling schedule.* We must go out of our way to control our distributors' loaf-cheese selling prices, as under the new plan arranged in Chicago last week it *gives everybody an opportunity to live and at the same time do business,* and if we do our part and the other members of the industry do their part it is going to make a nice picture of loaf cheese.[10]

Thus, "live and let live" was the rational order of the day. One effective method of price maintenance was the threat of withdrawing the manufacturer's line. "All distributors have been cautioned that the next time a retailer cuts the price of Chateau . . . . he will have to automatically be forced to discontinue service on that item. This does force much of the responsibility for resale price maintenance upon the distributor."[11]

One of Borden's specialty jobbers told the merchants in his territory that "if they cut the price below two for 29 cents, I not only would not sell them any of our line, but would not come inside their stores as long as they were in business."[11] Kraft-Phenix used similar methods, discontinuing to sell to distributors who

[9] *Ibid.*, pp. 67–68 (my italics).

[10] *Ibid.*, p. 66 (my italics).

[11] *Ibid.*, p. 67.

would not "stay in their own territory on salad dressings" and who failed to maintain Kraft's list price on cheese.[12]

Packaged cheeses were thus in the hands of so few manufacturers that they could use the threat of withholding their well-advertised lines to enforce resale price maintenance.

That advertising was the chief instrument of competition is shown by the following statement from Borden's files:

> It is easy to follow Kraft's successful markets by the amount of money they spend . . . . . In Louisville they buy plenty, while in a market like Cincinnati, where Kroger rules the roost, they spend very little . . . . . Concentrated effort should be made on every one of these outlets in that Louisville territory . . . . [using] co-operative advertising money to buy our way in, if necessary.[13]

The monopolistic elements in resale price maintenance have been pointed out very clearly by Galbraith:

> If the price competition becomes severe, and particularly if consumer preference in the matter of brands is thereby weakened, the manufacturer will be forced to cut his prices to the trade. Should he not do so it is apparent that he will find his retail outlets drying up as retailers press the brands on which their margin is more satisfactory. But when price cutting to the trade becomes necessary, monopoly power is much weakened. The manufacturer's problem is no longer one of achieving the optimum adjustment to his individual demand curve. His product is marketed in volume and at prices that are subject to the vagaries of retailer competition.
>
> In the case of oligopoly, and the probably more common one of oligopoly merged with monopolistic competition, a similar situation obtains. If retailers engage in price competition, prices to the trade cannot be maintained except where consumer preference or brand differentiation is powerfully intrenched. These cuts, of course, will bear no necessary relation to adjustments in price which maximize the producers' gains.[14]

In spite of the Borden Company's relatively strong position in packaged cheese, it was faced with some important outlets which were also in a strong bargaining position—the national chain-store systems. In 1936 a member of that company wrote that "approximately 80 per cent of our total package-cheese business in the country is done with chain stores." Another intercompany letter stated that

[12] *Ibid.*, pp. 114–15. [13] *Ibid.*, p. 68.

[14] J. K. Galbraith, "Monopoly Power and Price Rigidities," *Quarterly Journal of Economics*, L (1936), 468–70.

national chain stores will not let us put different distributors in their stores in different markets; hence it is compulsory for a national manufacturer to have a national set-up for delivery to chains and that set-up must be one that is already delivering something to their stores, for they have been very hard-headed about putting additional distributors in their stores over the last few years.

Think what you may of chain-store business, it is still absolutely indispensable from a manufacturer's standpoint. Their percentage of total retail volume is so great that no manufacturer can exist without them.[15]

The chain stores' position was weakened, however, by the fact that the distributors held basic patents which prevented the chains from doing their own processing—a weapon the threat of which would have greatly improved the chains' strength in bargaining had it been available. In 1934 the three dairy corporations most important in cheese (exclusive of packers) distributed 42.7 per cent of domestic production. The ten most important corporations distributed only slightly more.

Armour and Swift ranked second and third to Kraft-Phenix in 1935, distributing 14.9 and 13.8 per cent, respectively, of domestic production. They were probably the two most important bulk cheese distributors. Kingan and Cudahy ranked fifth and sixth. These four packers distributed 38.2 per cent of the domestic production, while the ten leading packers distributed 42.7 per cent.

The National (Wisconsin) Cheese Producers' Federation suffered a sharp drop in business in 1931 and 1932 as a result of enormous losses on large inventories during a falling price-level. This meant previous overpayments to the member-factories, which proceeded to withdraw from the Federation in large numbers. In 1934 the Federation became a member of Land O'Lakes, a large butter co-operative federation, with selling facilities largely integrated through to the retail store. The three principal co-operative sales agencies are now distributing about 6 per cent of domestic production, compared with 10.4 per cent in 1930.[16]

[15] Federal Trade Commission, *Sales and Distribution of Milk in the New York Sales Area*, pp. 72–73.

[16] Since efforts to set up a cheese-marketing agreement under the A.A.A. failed, government aid since 1930 has been limited to a small volume of cheese purchases for relief distribution.

IV

Bulk cheese prices continue to be established on the two Plymouth exchanges, in spite of repeated recognition of the obvious lack of competition on the boards. In 1935 practically all sales of Twin cheese on the Wisconsin Cheese Exchange were made by and between ten members, most of whom represent the large-scale distributors. According to the Federal Trade Commission, "all who buy or sell on the exchange are dealers in or purchasers of bulk cheese. No dairy farmers or bulk-cheese manufacturers are represented on the board, except insofar as the integrated companies such as Kraft-Phenix and subsidiaries are manufacturers, as well as purchasers and users, of bulk cheese."[17] Sales of cheese on the exchange in recent years have been very limited.

During 1935, practically all the Twin cheese was *offered for sale* by subsidiaries of Swift, Kraft-Phenix, Borden, and Armour. It was purchased, with few exceptions, by five cheese-dealers. All Daisies were offered by Winnebago Cheese Company and taken by A. & P.[18]

As the Federal Trade Commission observed,

> A remarkable feature of the offerings on the Wisconsin Cheese Exchange is that certain [*processors*] . . . . regularly make offers. . . . . These offerings are remarkable because the processors would naturally be purchasers rather than sellers of the large style of bulk cheese, such as daisies and twins, the kinds dealt in on the exchange. . . . . A price established by a purchase of a dealer who also regularly receives cheese from the bulk-cheese factories might be considered as applicable to cheese received from such sources, whereas a price paid by a processor to a dealer would more logically be interpreted as a dealer's resale price. Therefore, to do his part in the price-establishment procedure, the processor must be an offerer rather than purchaser.[19]

In Figure 1 the weekly quotations established on the Wisconsin Cheese Exchange for Twins are shown for the three years 1936–38. The considerable stability is apparent. Since the price is established for a week at a time, fifty-two changes a year are pos-

[17] Federal Trade Commission, *Sales and Distribution of Milk in the Chicago Sales Area* (1936), p. 91.

[18] *Ibid.*, p. 95.

[19] Federal Trade Commission, *Co-operative Marketing* (1928), p. 642.

sible. The actual numbers of changes in the three years were fifteen, nine, and twenty-one, respectively. There was one period of twenty-four weeks during which a single price ruled, while prices sometimes continued unchanged for twelve to fourteen weeks at a time even in the season of heavy marketing. In the late summer of 1938 new rules of trading on the Wisconsin Cheese Exchange were set up designed to increase the volume sold at the weekly meetings. Prices have been more flexible since then. The

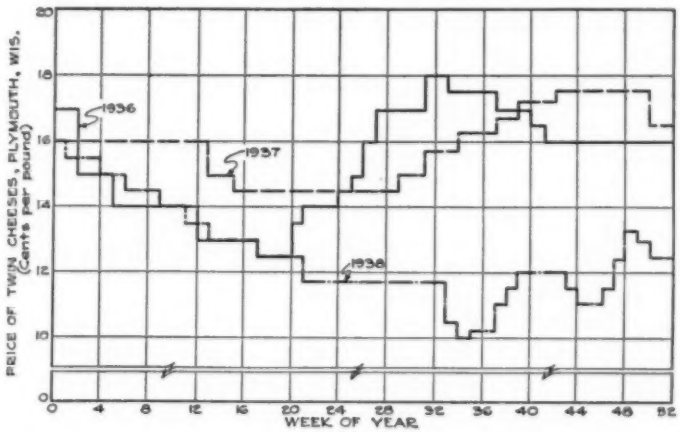

FIG. 1.—Ruling price of cheese, Twins, Wisconsin Cheese Exchange, Plymouth, Wisconsin, by weeks, 1936–38.

very marked concentration in the industry makes it seem unlikely, however, that the results will guarantee a competitive price to the producer.

In order to check whether or not the inflexibility of prices on the Wisconsin Cheese Exchange was a relatively new development, the period 1918–38 was divided into seven three-year periods. Within each of these periods the frequency of occurrence of various periods of unchanged price was tabulated (see Table 1). The frequency distributions presented in Figure 2 are based on this tabulation.

Examination of these data reveals clearly the growing inflexibility of prices during the post-war period. The average period during which a single price ruled increased from a low of 1.25 weeks in 1921–23 to a high of 3.25 weeks in 1936–38. In fact, if 1938 is omitted because of the change in exchange procedure, the average period for 1936–37 was 4.0 weeks. Price flexibility increased slightly between 1918–20 and 1921–23, at a time when our

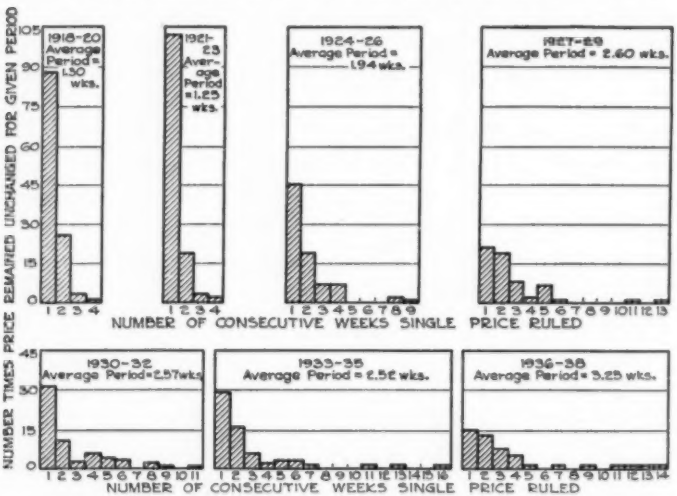
NUMBER TIMES PRICE REMAINED UNCHANGED FOR GIVEN PERIOD
1918-20 Average Period = 1.50 wks.
1921-23 Average Period = 1.25 wks.
1924-26 Average Period = 1.94 wks.
1927-29 Average Period = 2.60 wks.
NUMBER OF CONSECUTIVE WEEKS SINGLE PRICE RULED
1930-32 Average Period = 2.57 wks.
1933-35 Average Period = 2.56 wks.
1936-38 Average Period = 3.25 wks.
NUMBER OF CONSECUTIVE WEEKS SINGLE PRICE RULED

FIG. 2.—Frequency of occurrence of various periods of unchanged price, Twin cheeses, Wisconsin Cheese Exchange, by three-year periods, 1918–38.

previous analysis indicates that the increasing competition of processors and chain stores was first felt. By 1927–29, however, there had been a marked trend toward less flexible prices, during a period in which considerable concentration took place in the cheese industry. The degree of flexibility showed little change between 1930 and 1935 but showed a further sharp decrease during the last three years.[20]

[20] Since butter prices were prevented by government price-pegging from reaching their natural competitive level on the butter exchanges, off and on during 1930–38, it is probable that some of the stability in cheese prices since 1929 was at times the

There appears to be a prima facie inference that this marked and growing stability of prices—in light of the conditions under

TABLE 1

FREQUENCY OF OCCURRENCE OF VARIOUS PERIODS OF UNCHANGED PRICE TWIN CHEESES, WISCONSIN CHEESE EXCHANGE BY THREE-YEAR PERIODS, 1918–38

NUMBER OF CONSECUTIVE WEEKS SINGLE PRICE RULED	NUMBER OF TIMES PRICE REMAINED UNCHANGED FOR PERIOD GIVEN IN COLUMN 1 IN—						
	1918–20	1921–23	1924–26*	1927–29	1930–32	1933–35	1936–38
1	88	102	45	21	31	29	15
2	26	19	19	19	11	16	13
3	3	3	7	8	2	6	8
4	1	2	7	2	6	2	5
5	.....	.....	.....	7	4	3	1
6	.....	.....	.....	1	3	3	.....
7	.....	.....	.....	.....	.....	1	1
8	.....	.....	2	.....	2	.....	.....
9	.....	.....	1	.....	1	.....	1
10	.....	.....	.....	.....	.....	.....	.....
11	.....	.....	.....	1	1	.....	1†
12	.....	.....	.....	.....	.....	.....	1
13	.....	.....	.....	1	.....	1	1†
14	.....	.....	.....	.....	.....	.....	1
15	.....	.....	.....	.....	.....	.....	.....
16	.....	.....	.....	.....	.....	1	.....
Average period without price change (weeks)	1.30	1.25	1.94	2.60	2.57	2.52	3.25‡

* Between May 3, 1924, and March 26, 1926, there were no quotations for Twins, so that the price of Single Daisies was used instead.

† Between October 15, 1936, and April 2, 1937 (24 weeks), the price remained unchanged at 16 cents.

‡ If 1938 is omitted because of change in exchange procedure, the average for 1936–37 becomes 4.00 weeks.

which they are established—has not reflected comparable stability in supply and demand conditions.

---

result of artificially maintained stability in butter prices. Thus we can be sure of the growing inflexibility of cheese prices for 1918–29 but can only say that during 1930–38 the stability of cheese prices (apart from any *artificial* influence from butter prices) *probably* increased still further (cf. Nicholls, *Post-war Developments in the Marketing of Cheese*, p. 100).

The leading figure in the industry, J. L. Kraft, expressed his views of the cheese pricing mechanism in 1933 as follows:

> The price of cheese has been maintained more in keeping with its market position than butter or condensed milk. In the early days there were a large number of cheese dealers in Wisconsin and New York State, probably two or three hundred. The method of pricing was upon various call boards scattered throughout [these] states. Government statistics as to stocks on hand, etc., were not available and these dealers, who were mostly local cheese makers, developed into cheese dealers by agreeing to sell the output of their neighbors' factories. They did not have adequate business training, and the weekly call boards were a means of working off *personal grudges* more than to establish a market in keeping with the trend.
>
> Therefore, all of these markets fluctuated widely, sometimes a difference of half a cent a pound being established between one week's market and the next.
>
> *The wide fluctuations in price from week to week made it impossible for the dealers to do business in a business-like way or take a profit.* Therefore, over a period of time all of this type of cheese dealers failed or voluntarily went out of business, *and the cheese business drifted into the hands of packers and a limited number of other dealers who were soundly financed and used sound business practices.*
>
> For the past few years a *fair price* has been established on the Plymouth Call Board in Wisconsin, which, to a very large extent, has been the ruling price throughout the country, or in other words, the basic price from which to figure. *This price has not been established by agreement but rather by sort of a tacit or mutual understanding as to what a fair relationship or fair value for the product should be, based upon statistical information and the law of supply and demand.* During this period, the price to the farmer has been equal if not better, on the average, than the price which either butter or condensed milk has brought and has paid the farmer better returns than anything he has been able to raise on his farm.[21]

This letter has been quoted at some length, since it brings out several important points. First, as Kraft intimates, the chief competition which the present concentrated cheese industry has to meet is not within the industry itself. This competition is with the butter and condensed milk industries for the use of the milk supply. This competition still leaves a significant range within which monopolistic elements in the cheese industry can work

[21] *Federal Trade Commission Sales and Distribution of Milk in the Chicago Sales Area*, pp. 98–99 (my italics).

against the farmer who sells his milk to the crossroads cheese factory.[22]

Second, Kraft's letter reveals the typical industrial belief in the desirability of a stable price in order "to do business in a business-like way," and in the "sound business practices" which accompany a more stable price when concentration in an industry becomes marked. We have seen how much in keeping with Kraft's ideas the prices on the cheese exchange have been.

Finally, it brings out the common quasi-legal distinction in the industrialist's mind between setting price by "agreement" and by "tacit or mutual understanding." The real point at hand is the fact that only the buyer of cheese—the large-scale distributor—is party to the decision as to what the "fair" price should be. The "law of supply and demand" is doubtless important in the decision of the large cheese distributors as to the "fair" price of cheese, but there seems to be prima facie reason to raise the question whether that famous economic law as interpreted by these distributors is the most desirable from the social viewpoint, either for the milk producer or for the consumer.[23]

V

A study of marketing channels for cheese in 1934–35 shows that about two-thirds of domestic cheese production moved through integrated channels from the dairy corporation or meat-packer direct to the retailer or large user (Fig. 3). Some 52 per cent passed through channels integrated all the way from the country cheese factory to the retailer or large user, while 29.3 per cent more reached the retailer through integrated channels after the intervention of an independent assembling dealer in the coun-

[22] The imperfections in this competition for alternative uses of the milk supply are considered in *Iowa Res. Bull. 261*, pp. 101–6.

[23] Some theoretical aspects of this question are considered in *ibid.*, pp. 120–28. This section is included as "(1) an exercise in the *technique* of the theory of monopolistic competition on the buying side, and (2) to raise some questions which must be answered before the competitive aspects of the cheese industry have been fully and satisfactorily treated" (*ibid.*, p. 120). This discussion attempts to analyze the theoretical effect of an increase in consumers' demand for processed cheese upon the processor's demand for bulk cheese under monopolistic and competitive conditions.

try. Nearly 5 per cent moved from the local factory to the consumer—either direct or through the manufacturer's own retail stores.

The old-line wholesale channels apparently brought only 14.5 per cent of the cheese to retailers and large users in 1934–35 (compared with perhaps 50 per cent in 1918). Only 2 per cent of domestic cheese moved all the way from local factory to consumer

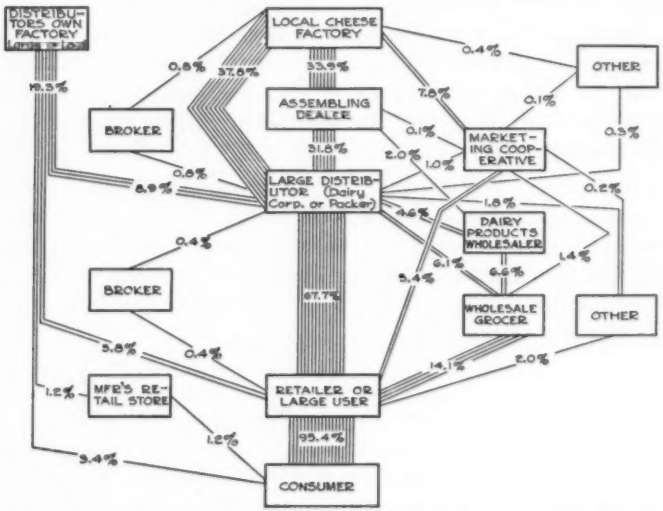

FIG. 3.—Marketing channels for cheese, 1934–35 (based on census and Federal Trade Commission data).

through independent agencies. Thus, wholesale channels now play a very minor role in cheese distribution. Since 36 per cent of butter moved through wholesaler-jobber channels in 1935, it may be seen that cheese is far less dependent on wholesalers than butter.[24]

At the present time the cheese industry is becoming restive, since some of the basic patents have expired. The large distributors, however, still hold patents on later processing equipment which gives them great technical advantages over competitors. The enormous good-will they have built up for their prod-

[24] Nicholls, *Post-war Developments in the Marketing of Butter*, esp. p. 362.

ucts through extensive differentiation in packaging and advertising is also likely to be an important barrier to the growth of other processors, even though the latter can now legally enter the field. The most important potential development is probably the entry of the chain stores into the cheese processing field, especially if the large distributors continue to insist too much upon dictating resale prices.

Concentration in the cheese industry has increased greatly since 1918. In that year the four largest meat-packers dominated cheese distribution, handling 48.5 per cent of the nation's volume. In 1934–35 four companies distributed 70.1 per cent of domestic production, nearly 50 per cent more than the four leading companies of 1918. Armour and Swift declined somewhat in importance during the post-war period but still ranked second and third in importance. A single company now distributes one-third of the country's cheese, or nearly as much as the two largest companies in 1918. The six largest companies now distribute about 80 per cent of the nation's cheese production. Since the six largest butter distributors handle about 38 per cent of the country's butter and the six largest condensed milk manufacturers about 60–65 per cent of total condensed milk production, it is readily seen that, among the leading manufactured dairy products, concentration has proceeded farthest in cheese.[25]

VI

Considerable evidence has been presented in this study pointing to important monopoly elements in the cheese industry. The chief purpose has been to trace the development of concentration in the industry, the changes which this has brought about in marketing channels, and the primary forces responsible for such concentration. This paper has brought together material concerning the conditions in the cheese market and, to some extent, the policies of the leading firms. An analysis of the results of these policies and possibilities of improvement in these results, however, is beyond the scope of this paper, although enough questions have undoubtedly been raised to indicate the need of such an analysis at the present time.

[25] With the possible exception of ice cream.

We have seen that there was a marked trend toward direct marketing in the cheese industry after 1918. At the end of the war the movement toward more integrated distribution of agricultural products was just getting under way. Direct marketing of cheese was carried on chiefly by organizations most closely approximating the large nonagricultural industries in size, resources, and standardizing facilities—the meat-packers.

The great post-war increase in direct marketing of cheese was largely brought about by the development of still other organizations of size, financial strength, and standardization comparable with those industries in which direct marketing had made early headway. The most important contributing factor was the development of processed cheese. For the first time cheese became a standardized product, easily adaptable to packaging, branding, and advertising, instead of a bulk product notoriously variable in grade, flavor, color, and texture. The result was that the need for the wholesalers' once-vital functions of grading, standardization, and selection was eliminated, in so far as cheese was processed. Large volume made possible scientific laboratory control over processing, which enables processors to use an important amount of off-grade raw material and still turn out a palatable, standardized product. The increasingly large volume of the processors also favored the establishment of their own assembling and buying subsidiaries at the expense of independent country dealers. The processors continued to use wholesale channels to sell their product for a few years after certain of the wholesalers' functions were no longer needed. Then they began to supplement the sales efforts of their wholesale distributors; and with still larger gains in volume, made possible by acquisitions and mergers and with growing financial strength, they took over the sales promotion functions completely.

The existence and further development of such extensive distributing facilities for cheese during the late twenties made diversification economically desirable. The many supplementary and complementary relationships among dairy and poultry products in production, assembly, and distribution were doubtless one important factor in the growth of the large dairy corporations.

Post-war concentration in the cheese industry, however, was to

a large degree due to monopolistic elements, especially to patents, which prevented greater integration by chain stores and producers' co-operatives. Even economies of scale alone—without patent rights—tend to lead to monopoly. The limit to decreasing costs resulting from economics of large-scale marketing is remote. Robinson has said:

> There is good reason for thinking that in many industries, where by the nature of the product a firm must market its own produce through a sales organization which extends far towards the final consumer, that organization will continue to yield economies with further expansion after all the technical economies have been secured, and after the limits of efficient management are approached.[26]

Here we run into the dilemma which brought on the famous "cost controversy" of the twenties: "The persistence of decreasing costs for the individual firm over a wide range of output is . . . . one of the forces tending to oligopoly or monopoly when the demand is not large enough to retain a large number of firms in competition at optimum output."[27] The existence of large-scale economies has tended persistently to result in firms in all industries so large that ultimately market control, rather than low cost, becomes the major consideration. In an industry as concentrated as the cheese industry the movement toward integration and more direct marketing did not necessarily come as a result of lower distribution costs. It was only necessary that these costs be not increased by integration so much as to cancel the advantages from greater control of resale prices and sales promotion. If costs were lowered, so much the better. The standardization of cheese through processing, by eliminating the need for the most important services of the cheese wholesalers, made possible lower costs of integration than if processed cheese had never been introduced. But the monopoly element of price-control increasingly held the center of the stage rather than competitive cost.

While the economies of large-scale distribution probably would have led, over a period of years, to a greater concentration in processed cheese than existed in the period of the early twenties, such concentration was certainly greatly hastened and enhanced by the legal monopolies bestowed upon a few select processors.

[26] E. A. G. Robinson, *Structure of Competitive Industry* (rev. ed., 1935), p. 82.
[27] Albert L. Meyers, *Elements of Modern Economics* (1938), pp. 116–17.

These patents made high margins possible without fear of the entry of meat-packers, chain stores, co-operatives, or other organizations into processing. The several processors favored by patents could not long be expected to compete. Combination—unless it had been prevented by government action—was inevitable. Kraft and Phenix each was able to acquire a large number of companies who were actual or potential competitors before the courts established the validity of their patents. Then these two large companies combined and formed a "monopoly of monopolies," at least for a decade or more. A decade of extensive advertising and product differentiation—unimpeded by effective competition—can build "good-will" until it becomes a great barrier to the entry and growth of other firms, even after the expiration of the original patents makes such entry legally possible. By 1930 the basic patents were held by the nation's two largest dairy corporations—National Dairy Products and Borden. The marked tendency toward combination in many industries during the twenties—even where patent rights were not involved—was, to an important extent, monopolistic in character. In the cheese industry patent rights assured monopolistic combinations the strength of their positions.

The outcome of the patent developments in the cheese industry lends weight to the growing recognition that our patent laws are in need of revision. It is beyond the scope of this study to determine what these revisions should be. A few suggestions may be in order, however. The present patent laws tend to promote and perpetuate monopolistic concentration in industry. It is to alleviate this outcome that revision is necessary. First, the patent office should subject applications for patents to greater scrutiny than in the past, to determine the true novelty or originality of the product or process which it is proposed to patent. As one member of the cheese trade stated, it is possible that the processing of cheese was not really a valid subject for patent—in spite of court decisions to that effect—since "we have always had Welsh rarebit," which embodies the same procedure of heating to a plastic condition as did the very simple patented process. Too many patents are granted. "A slight improvement or a somewhat different way of accomplishing a particular result, may be pat-

ented in the United States." As Vaughan has stated, the number of patents should be reduced by making it harder to get them. "Claims should be broader and fewer in number; every claim of a patent should be more fundamentally differentiated from the claims of other patents."[28]

Second, the patent office should recognize the economic, as well as the technical, aspects of the powers it grants. The Supreme Court stated in an early decision: "It is undeniably true, that the limited and temporary monopoly granted to inventors was never designed for their exclusive profit or advantage; the benefit to the public or community at large was another and doubtless the primary object in granting and securing that monopoly."[29]

Third, it is possible that seventeen years is too long a period for an exclusive monopoly to be granted. Ten years might be much more sound from an economic point of view. To a similar suggestion Chamberlin has added that

> the wastes of advertising, about which economists have so often complained, would be reduced, for no one could afford to build up goodwill by this means, only to see it vanish through the unimpeded entrance of competitors. There would be more nearly equal returns to all producers and the elimination of sustained monopoly profits.[30]

When a considerably longer period of favor is expected, firms can grow enormously within an amazingly short time by combination. For example, Phenix became part of Kraft-Phenix, and Kraft-Phenix part of National Dairy Products—each very much larger than the preceding firm—within the three years 1928–30.

Fourth, combination leading to the concentration of patent rights relating to a particular process or industry into a single company should be prevented by procedure under the anti-trust laws. In addition, Vaughan has justly suggested that "the existence of a monopoly of this sort should furnish a defense for the infringement of its patents; in fact, their cancellation deserves favorable consideration."[31]

Only by changing the patent and other laws, and their administration, in light of our modern industrial structure, can we be assured that they will serve the public welfare as our forefathers intended.

[28] Vaughan, *op. cit.*, p. 183. [29] *Ibid.*, pp. 31–32.
[30] E. H. Chamberlin, *Theory of Monopolistic Competition* (2d ed., 1936), p. 208.
[31] Vaughan, *op. cit.*, p. 226.

CRITERIA FOR DETERMINING THE CREDITOR-DEBTOR POSITION OF A COUNTRY

PAUL D. DICKENS
Washington, D.C.

THE terms "creditor" and "debtor" countries, as commonly used and as used in the literature of international economics, have had somewhat different meanings. The former, the nontechnical usage, has usually been based on the incidence of a debt, the one to whom it is to be paid is the creditor and the one obligated to pay is the debtor. In international economics, however, creditor and debtor countries have usually been identified by the nature of their balances of international payments, that is, by the net credits (receipts) or debits (payments) in the service account or in the merchandise and service accounts. In recent years a few writers have adopted the nontechnical usage without discussion.[1]

Like most other concepts in economics, the concept of creditor and debtor countries has changed over a period of years, reflecting the history of international investments and the availability of statistical information. The development of the concept will be traced briefly in subsequent paragraphs. After examining available statistics bearing on the subject, an attempt will be made to restate the criteria for determining the creditor-debtor position of a country in accordance with present-day conditions.

EARLY FORM OF THE CRITERIA

Probably the most important of the early contributions to the subject was that made by J. E. Cairnes in 1873.[2] He identified

[1] Ralph A. Young, *The International Financial Position of the United States* (New York: National Industrial Conference Board, 1929); J. T. Madden, M. Nadler, and H. C. Sauvain, *America's Experience as a Creditor Nation* (New York, 1937); and Cleona Lewis, *America's Stake in International Investments* (Brookings Institution, 1938).

[2] *Some Leading Principles of Political Economy, Newly Expounded* (New York, 1900), pp. 360–62.

the stages of international borrowing and the effects on the equilibrium of international trade. Those stages have since been identified as immature debtors, mature debtors, immature creditors, and mature creditors.[3] The stages were characterized, in Cairnes's treatment, by an excess of merchandise imports, an excess of exports, an excess of exports, and an excess of imports, respectively. Cairnes simplified his examples purposely, apparently pairing off merchandise and capital movements, but he saw clearly that other types of international transactions had to be considered.

These stages were not set forth as phases of the debtor and creditor development and probably were not thought of in that way. Rather they were stages in international borrowing. Nevertheless, they became the basis of future discussions of the debtor and creditor positions of countries. Unfortunately, in making the transition from Cairnes's stages of international borrowing to the creditor-debtor position of countries, other writers did not perceive the difference which that transition should make in their thinking. They still wished to identify the phases of the latter on the basis of balances of payments characteristic of periods when there was an outflow or an inflow of capital.

CRITERIA CHANGES IN LIGHT OF ECONOMIC DEVELOPMENTS

England, up to the beginning of the war of 1914–18, was the great example of a creditor country. Year after year the English balance of payments was characterized by a large excess of merchandise imports. This large debit on merchandise account was more than offset by the large service credits, that is, the net returns from the foreign services of British shipping, the income from British investments in foreign countries, and the commissions due English banks and bankers for financial services to the world. Such a balance-of-payments structure was so striking and

[3] Theodore H. Boggs, *The International Trade Balance in Theory and Practice* (New York, 1922), pp. 7–9. An article in the *London Economist* (January 29, 1938, pp. 231–32) mentions six classifications as follows: immature debtor borrowers, mature debtor borrowers, debtor lenders, immature creditor lenders, mature creditor lenders, and creditor borrowers. C. E. Griffin in an article on "The Future of Our Creditor Position" (*Journal of Political Economy*, August, 1923, pp. 544–60) identifies five stages, partly on the basis of the comparative level of interest rates in lending and borrowing countries. His third stage is really of minor significance.

so characteristic of England's international transactions that an excess of credits on service account (invisibles) became the accepted mark of a creditor country for many years.

In 1927, after the advent of the United States as a creditor nation, Professor F. W. Taussig wrote:

> In popular talk on these matters it is commonly assumed that a creditor country *ipso facto* has an excess of merchandise imports, and a debtor country an excess of exports. The creditor country—so people imply in their everyday talk—has payments to receive, the debtor country has payments to make; the former is expected to show a net credit in its accounts, the latter a net charge or net outgo. Not at all. The state of the merchandise account, the balance of the money values of imports and exports, may run either way, for either debtor or creditor country. It depends on the stage which the credit operations have reached.[4]

In a critical article Professor Bullock pointed out in 1932 that the rise of the United States as a financial center of the world necessitated a revision of the definition of a creditor country. The need for revision may be stated briefly as follows: The balance of payments of the United States was characterized, for a number of years after it became a creditor country, by an excess of debits (payments) on service account, while, on the other hand, there was the traditional large credit on merchandise account. Therefore, although clearly a creditor country,[5] the United States exhibited a balance of payments opposite in structure to that of England.

Professor Bullock reached the following conclusions:

> If, therefore, economists are to use the terms "creditor" and "debtor" country, they should disregard capital transactions and consider only a country's normal position on income account.[6] . . . . For the present it is to an excess of commodity exports, a thing formerly supposed to be characteristic of debtor countries, that we must look for justification of our claim to the title of creditor.[7]

[4] *International Trade* (New York, 1927), p. 129. This statement followed a section in which stages of international borrowing quite similar to those of Cairnes were discussed.

[5] According to the criteria suggested in the last section of this article.

[6] By income account Professor Bullock had in mind the total of the trade and service items as shown in the official balance of international payments of the United States.

[7] C. J. Bullock, "The United States as a Creditor Nation," *Review of Economic Statistics*, XIV, No. 4 (November 15, 1932), 178–80.

Taussig merely restated Cairnes's ideas, while Bullock took the emphasis off the service account only to transfer it to the total of the trade and service accounts.[8] Nevertheless, inasmuch as he was discussing "our claim to the title of creditor," even that was insufficient, because, normally, that is assuming that gold movements cancel out in the long run, when the trade and service account has a credit balance, the capital account will show a debit balance, an export of capital, and vice versa. In other words, a balance on trade and service (income) account is an indication of the current movement of capital but not of the accumulated capital position. It shows that a country is importing or exporting capital, not that it is a creditor or debtor.

BALANCE-OF-PAYMENTS DATA NOT SUFFICIENT

The impracticability of using the merchandise account, the service account, or the two combined to determine the creditor-debtor status of a country may be demonstrated by reference to Table 1. Australia, Canada, and Poland, all clearly net debtor countries, with interest and dividend payments greatly exceeding receipts and with foreign liabilities much larger than assets (see Table 2), had as a rule net debits on merchandise account during the pre-depression years and net credits during the post-depression years. Denmark and Norway, net debtor countries also, had excess imports during both periods. On service account Australia, Canada, and Poland made net payments during both periods, whereas Denmark and Norway enjoyed net receipts. The structure of the merchandise and of the service accounts of Denmark and Norway was the same as that of France, Sweden, and the United Kingdom—typical creditor countries according to the criteria accepted until after the war of 1914–18. However, the size of the balances of the two accounts in the respective groups of countries, that is, the debtor and the creditor countries, was such that the balances of the combined trade and service accounts of the two groups were exactly opposite. The United States, a creditor country, had net balances on trade and on service accounts

[8] C. F. Bastable (*The Theory of International Trade* [New York, 1903], chap. iv) developed the idea of a creditor-debtor status on each item of the current account.

quite different from those which the older view of a creditor country presumed.

The balances of the combined merchandise and service accounts of most of the countries studied in Table 1, both of creditor and of debtor countries, shifted rather decidedly in character from the pre-1930 to the post-1930 period—depression phenomena.[9] The changes brought about by the depression no longer permit the old criteria to be used. Norway and Poland, for example, both changed from debit to credit balances on current account (trade and service). They did not, however, become creditor countries or begin to lend to foreign countries about 1930. Instead, although they were unable to borrow from abroad, they were under contract to maintain amortization payments on their outstanding foreign debt. Canada did not shift from debtor to creditor or from borrower to lender but did become more nearly self-sufficient as regards current capital requirements and began repatriating parts of its debt to foreign countries.

France and the United Kingdom, which began to have debit instead of credit balances, did not become borrowers. Rather, the return flow of capital previously invested abroad began to exceed new investments. Japan, on the contrary, appears to have shifted from borrower to lender, new investments in Manchuria being very large starting about 1932. This explains in part the shift in the merchandise and service account balance of Japan about 1930. With this exception these shifts did not signalize the advent of a new period in the creditor-debtor status of those countries, only a change in international borrowing.

After 1934 the heavy inflow of foreign funds into the United States and the return flow of United States capital previously invested abroad were exceeded by the tremendous gold imports and, therefore, were not reflected in the merchandise and service account balances after 1931 (see Table 1) as clearly as such a capital import would otherwise have been. While these capital

[9] In the League of Nations, *Balances of Payments, 1935, 1936,* and *1937,* in "Recent Tendencies," section on "Balance on Current Account of Creditor and Debtor Countries," there is an excellent discussion of the current account changes but no statement of the criteria used in determining the status of the countries.

imports tended to reduce the creditor position of the United States, they did not make this country a borrower. The foreign funds coming in were not borrowed,[10] instead they were sent over here for safekeeping or for a place of refuge. Under present conditions, foreign demand deposits in United States banks (a large part of the inflow took that form) do not have the same effect upon our balance of payments or upon our economy that borrowed funds would have, except at the time of original transfer. In other words, those deposit funds do not yield any income and, therefore, do not affect the interest and dividend account. Furthermore, they have had the minimum effect on the total bank credit outstanding and upon our general economic position owing to the inability of the banks to find acceptable borrowers of the already swollen reserve funds. Purchases of stock-exchange securities, a large part of which were made seeking a place of safety, did have most of the effects usually associated with borrowed capital.

INTEREST AND DIVIDEND ACCOUNT ANALYZED

A recent article in the *London Economist* defined creditor and debtor countries as follows: "A debtor country is one that has borrowed in the past and consequently has to make payment of interest; a creditor country, conversely, is one that receives interest."[11]

In every case shown in Table 2 the interest and dividend account identified the net investment position correctly, although not the relative proportions of the assets and liabilities. Further analysis of Table 2 and of the basic data used in its preparation illustrates the principal defect in the interest and dividend account as a measure of a country's creditor or debtor position. This defect may be stated briefly as a lack of comparability between the value of the various types of assets and their income-

[10] Borrowing is looked upon as a positive act on the part of the borrower, that is, borrowed capital is sought and a service is expected of it by the borrower.

[11] January 29, 1938, pp. 231–32. *The Report of the Commission of Inquiry into National Policy in International Economic Relations* (Part III, "Report of the Director of Research" [Minneapolis, 1934], p. 119) used practically the same definition.

TABLE 1*

TRENDS IN THE BALANCE OF INTERNATIONAL PAYMENTS OF VARIOUS COUNTRIES, ACCORDING TO THE NUMBER OF YEARS OF CREDIT OR DEBIT BALANCES

COUNTRY	BALANCES OF PAYMENTS AVAILABLE FOR YEARS	MERCHANDISE ACCOUNT BALANCES		SERVICE ACCOUNT BALANCES		TOTAL MERCHANDISE AND SERVICE BALANCES		CAPITAL ACCOUNT BALANCES	
		Credits	Debits	Credits	Debits	Credits	Debits	Credits	Debits
		Number of Years							
Australia†	1920–29	2	8	0	10	1	9	2	0
	1930–36	7	0	0	7	2	5	2	5
Canada‡	1920–30	7	4	0	11	5	6	2	3
	1931–37	6	1	0	7	3	4	1	6
Denmark§	1923–30	0	8	8	0	2	6	5	2
	1931–37	0	7	7	0	5	2	2	5
Finland	1922–30	4	5	9	0	6	3	‖	‖
	1931–37	7	0	6	1	7	0	‖	‖
France	1927–30	1	3	4	0	4	0	¶	¶
	1931–37	0	7	7	0	0	7	¶	¶
Japan	1924–30	0	7	7	0	1	6	5	2
	1931–36	1	5	6	0	5	1	0	6
Norway	1923–30	0	8	8	0	0	8	8	0
	1931–37	0	7	7	0	6	1	2	5
Poland	1923–30	3	5	4	4	2	6	6	2
	1931–36	6	0	0	6	6	0	0	6
Sweden	1923–30	2	6	8	0	8	0	3	5
	1931–37	0	7	7	0	6	1	1	6
United Kingdom**	1927–30	0	4	4	0	4	0	¶	¶
	1931–37	0	7	7	0	1	5	¶	¶
United States††	1919–30	12	0	4	8	12	0	2	10
	1931–37	4	3	4	3	4	3	4	3

* Source: League of Nations, *Balances of Payments, 1937* (Geneva, 1938).

† Covers fiscal years 1920–21, etc. Data regarding the capital items were available only for the years 1928–36.

‡ Excluding gold exports. Data regarding the capital items were available only for the years 1925 and 1927–37.

§ Capital movements balanced in 1928.

‖ Capital items were only available for 1936 and 1937. In both years there was an excess of debits (outflow).

¶ No data available.

** Debits and credits in total trade and service account balanced in 1933.

†† Following the League of Nations policy, for purposes of comparability these data include the silver trade with the merchandise trade, which accounts for the import surplus from 1935–37, inclusive.

producing capacities. In some cases this lack of comparability is the rule, for example, the higher rate of yield on long-term than on short-term assets. In other cases it is of a highly fluctuating character with first one and then another type of asset having the higher yield. The differences between investments in foreign bonds and direct investments are illustrative of this point, the former with a relatively stable and high yield during depressions and the latter with sharply fluctuating and high yields during periods of prosperity.

TABLE 2*

INTEREST AND DIVIDEND, AND INTERNATIONAL INVESTMENT RATIOS, 1937

Country	Interest and Dividends: Ratio of Receipts to Payments	International Investments: Ratio of Assets to Liabilities
Australia	1.0:21.8	1.0: 8.0
Canada	1.0: 4.2	1.0: 4.0
Denmark	1.0: 6.3	1.0: 2.6
Finland	1.0:10.7	1.0: 1.5
France	6.6: 1.0	†
Japan	1.2: 1.0	†
Norway	1.0: 4.6	1.0: 2.8
Poland	1.0:22.2	1.0:16.9
Sweden	4.4: 1.0	†
United Kingdom	†	†
United States	2.2: 1.0	1.7: 1.0

* Source: Based on data in League of Nations, *Balances of Payments, 1937* (Geneva, 1938).

† No data available.

With high- and low-yielding types of investments comprising varying proportions of the foreign assets and liabilities of each country, the interest and dividend account cannot measure accurately the creditor-debtor position. The ratios of interest and dividend receipts to payments and of assets to liabilities, as shown in Table 2, are especially dissimilar in the cases of Australia, Denmark, and Finland. All are countries in the sterling group and keep part of their currency reserves in London. Their short-term foreign assets comprise a much larger part of their total foreign assets than similar liabilities comprise of their total foreign liabilities. Inasmuch as those assets are nonincome-yielding or yield

income only at a very low rate, a disproportion exists between the two ratios.

The foregoing argument is not a denial that a net creditor position tends to cause receipts of interest and dividends to exceed payments. Nor is it a denial that net receipts of interest and dividends would influence the character of the balance on service account and on trade and service account. It is a denial, however, that a net creditor position determines absolutely the character of the balance of any of those three accounts. The type and relative size of the investments and their respective rates of yield, not absolute size alone, determine the balance of the interest and dividend account, while the entire economy of a country, which is reflected in a number of items, determines the balance of the service and of the trade and service accounts.

Although the interest and dividend account identified the creditor-debtor status in the cases given in Table 2, its defects, as pointed out in the preceding paragraphs, are likely to lead to entirely incorrect conclusions. In effect, definitions with such a basis would be justification for saying that the United States was not indebted to foreigners for the $2,000,000,000 of foreign funds now in noninterest-bearing demand deposit accounts in United States banks. Such conclusions might lead to embarrassing situations if adopted by responsible banking officials, as will be apparent if one considers the possible drain on the exchange market in case of the withdrawal of those funds.

INVESTMENT ESTIMATES: THE BASIC CRITERIA

A more satisfactory criterion of a creditor country, albeit one which raises some problems, follows common (nontechnical) usage rather closely. It bases the net creditor position on the net value of the foreign investments of and in a country. A creditor country is one which at any particular time has investments in foreign countries that exceed in value the investments of foreign countries in it. A debtor country is one in the converse position.

The principal problem connected with these criteria arises out of the use of the word "value." What type of value? It cannot be the capitalized value of the interest and dividends received and

paid because that would be equivalent to basing the definition on the interest and dividend account which was found to be inadequate for the purpose. It cannot be market value alone because market values cannot be obtained for the direct investments. It cannot be par value alone because many common and preferred stocks do not have par values. It cannot be liquidating value because the value at time of liquidation cannot be determined until the conditions of the liquidation are known. It cannot be the original investment or actual outlay because that would be a meaningless hodgepodge of 1900, 1929, and 1933 values, to mention but a few.

The type or types of values used for this purpose will of necessity be adapted to fit the type of investment and the manner in which it is held. For example, the estimates of the United States investments in foreign countries, as prepared by the Department of Commerce, are based primarily on the book values of the direct or entrepreneurial investments and the par values of portfolio investments or holdings of foreign bonds. On the other hand, the same agency in estimating foreign investments in the United States uses book values for the direct investments, market values for holdings of common stocks, and par values for holdings of preferred stocks and bonds. Inasmuch as no other method of valuation is suitable, capitalized-income and estimated values are used for the other investments—the trust fund, estate, and miscellaneous property holdings.

The difficulty with using several types of value in this way is that the respective investments are found in varying proportions in the assets and liabilities of a country. Accordingly, for certain specialized analyses care must be taken in using the investment estimates. The use of investment estimates may be criticized further because they are subject to a considerable margin of error. However, the same objection applies with at least equal force to the use of balance-of-payments estimates. Although the difficulties of valuation are real and the types of value are varied, the aggregates of carefully prepared estimates represent reasonable values, comparable from year to year.

In conclusion, it may be said, first, that earlier criteria were

based on England's position as a creditor country; second, that Cairnes's stages of international borrowing were carried over incorrectly into the analysis of creditor-debtor positions, that is, from the analysis of current capital movements to the accumulated capital position; third, that the balances of the combined trade and service accounts of the balance of payments may be used to indicate the current trends of capital movements but not the creditor-debtor position; fourth, that even the interest and dividend account, while in practice it seems to indicate the position correctly, is subject to serious defects in principle; and, fifth, that estimates of the respective investments—foreign assets and foreign liabilities—are the best criteria of the net creditor-debtor position of a country.

THE SPREADING OF THE GOLD POINTS AS A MEANS OF CONTROLLING THE MOVEMENT OF FOREIGN SHORT-TERM BALANCES

WALTER EGLE
Ohio State University

BOTH in the United States and abroad there has been apprehension about the "concentration of the gold" in this country.[1] While abroad feelings are centered around the fear of further and further depletion of gold reserves, the domestic criticism of the gold situation has been more varied.

There has been apprehension concerning the gold as such, i.e., the fear that gold might become obsolete as a means of international payments and that the United States might be left with a

[1] In the years from February, 1934 (the date of the new *de facto* stabilization of the dollar), to the middle of 1939 there was a total net inflow of gold from abroad amounting to about $9,300,000,000. It is well to divide this entire period into two parts. From 1934 through July, 1938, the import of gold was less conspicuous than in the months which followed. For whereas in the entire four-and-a-half-year period ending with July, 1938, the net inflow of gold amounted to $5,450,000,000 (monthly average, roughly $100,000,000), the ten months from August, 1938, through May, 1939, experienced an inflow of nearly $3,450,000,000 (monthly average $345,000,000). The two periods differ not only in regard to the intensity of the flow but also in regard to the type of transactions leading to the inward movement of gold. In the first period the active status of the American trade balance and the net inflow of foreign long-term capital as well as the repatriation of American long-term funds invested abroad accounted for the bulk of the gold imports. The net inflow of short-term balances was responsible for only a third of the gold inflow, namely, about $1,500,000,000. Of this sum $600,000,000 must be attributed to the repatriation of American short-term funds, so that about $900,000,000 resulted from the accumulation of foreign short-term balances. In the second period, however, this factor loomed large as a cause of the inward movement of gold. It is safe to say that it has been responsible for almost all the gold that has come into this country since August, 1938. There was little buying of American securities by foreigners after the depression which started in 1937. Also, the excess of commodity exports over imports (which was so strong in the months immediately following this depression) has shrunk considerably since the middle of 1938. Needless to say, the tremendous inflow of short-term balances during these late months has been connected closely with the recent political events in Europe.

type of asset which is bound to lose its value rapidly. More serious than this kind of criticism is that which is concerned with the causes of the gold inflow and particularly with its effects. In regard to the effects, the criticism has been concentrated largely upon inward movements of gold caused by the establishment of short-term balances, especially in so far as these balances represent "floating" money. It has been argued that these funds introduce an element of high instability into the monetary reserve and, therefore, the banking credit structure of this country. There has been little apprehension about the gold that comes in on account of the active status of the trade balance and the purchase of American securities by foreigners.[2] This is true at least as far as the attitude of professional writers on the subject is concerned.

Nothing characterizes this attitude better than the recent proposal of the so-called spreading of the gold points.[3] The very essence of this proposal lies in the idea of discouraging the international "floating" of money without interfering with the flow of gold in so far as it results from long-term capital and trade movements. This is supposed to be effected by the increase in exchange losses from the widening of possible fluctuations of exchange rates. Naturally, such a risk would tend to interfere more severely with the international movement of short-term balances than with those of long-term capital, since in the latter case the potential exchange loss at the moment of repatriation would, so to speak, be divided by the number of years during which interest-bearing assets are held abroad.[4] The smaller the spreading of the gold points necessary to control the flow of short-term balances, the brighter the hopes that such a scheme would leave the international long-term capital market undisturbed. Indeed, the sug-

[2] Criticism of the large inward movements of gold in connection with the "favorable" status of the trade balance has been directed primarily against this status of the balance rather than against the gold as such.

[3] Suggested by J. M. Keynes in his *Tract on Monetary Reform* ([London, 1923], pp. 189–91) and more specifically in *A Treatise on Money* ([London, 1930], II, 319).

[4] More precisely, the potential exchange loss is to be projected against the net yield (over and above the yield which the capital would bring at home) multiplied by the number of years the asset is expected to be held abroad.

gested proposal contemplates a minor spread of the points.[5] The reason for this is to be sought in the fact that the original proposal, as well as the ensuing discussion of the scheme by others, has been dominated by what may be called the traditional notion that international movements of short-term balances are motivated by interest differentials as between different countries.

This view is adequate as far as pre-war conditions are concerned and also those prevailing after the war until recent years. But it fails to cope with the situation which has developed since the proposal was made. Certainly the gigantic flight of short-term balances into the United States since the fall of 1938 must be considered as having been caused by forces immeasurably more powerful than interest differentials.[6] A modern version of the scheme of spreading the gold points, dealing specifically with the case of the United States, would, therefore, have to proceed in terms of a drastic widening of the margin between the points. And since this is so, apprehension arises about the effects of such a scheme upon the balance of long-term capital and—depending upon the way the points are spread—even upon the balance of foreign trade of this country.

Let us suppose that the United States should resort to the means of spreading the gold points in order to control the flow of short-term balances. The effect of such a measure would depend not only on the magnitude of the distance to be created between the points[7] but also on the particular level of the dollar price of

[5] Keynes mentions a widening of the margin by about 2 per cent (*A Treatise on Money*, p. 325) over and above the existing cost of transferring from one currency into another. This cost, expressed in terms of percentage of the value of the currency transferred, varies, according to Keynes, for different pairs of countries from ½ to 1½ per cent. The addition of 2 per cent resulting from the central bank's spreading of the buying and selling prices of gold would bring the total cost up to 2½–3½ per cent.

[6] This is true even in regard to the earlier inward movement of nervous money in 1935 and 1937, although the financial uncertainties and the gold scare abroad may not have been quite as powerful a force as the war-fear tension in 1938 and 1939.

[7] Technically the widening could be effected by either formally changing the buying and/or the selling price or by imposing a tariff on foreign gold. In the absence of a corresponding tax levied on the purchase of domestic gold, this latter case would, of course, amount to a discrimination against foreign gold.

gold at which the spreading is to take place. A certain spread might be established in such a way as to leave the selling price of gold at its present level but to lower the buying price correspondingly. Or the present buying price might be kept unchanged, the widening being effected by a corresponding increase in the selling price of gold.[8] In the first of these two alternatives the present gold export point would remain unchanged, i.e., the dollar could not fall on the exchanges any farther than it can today. In the second case, however, the gold export point would be lifted and a way opened for a potential decrease in the exchange value of the dollar down to that mark.

We may assume that this second alternative is chosen, i.e., that the United States Treasury raises the selling price of gold from $35 to, let us say, $45 per ounce of gold.[9] The probable effect would be a tendency among foreigners to repatriate short-term balances, motivated by fear of a fall of the dollar on the exchanges. The movement, once started, would tend to be kept alive until the dollar reaches the gold export point, although it would have to be expected to become weaker, the closer the dollar approaches that point. Once the export point is reached, there is no further reason to withdraw balances. On the contrary, as long as the dollar stays at that point or close to it, a new inward movement of balances might be expected. There are, however, narrow limits within which this could happen. For a new net demand for dollars would, of course, tend to raise the dollar on the exchanges. And the farther the exchange rate moves away from the gold export point, the greater the risk of potential exchange losses in the future.

This picture is, however, incomplete since we have not considered the effects which the fall of the dollar is likely to have upon the trade balance and the gold movements following from it. Judging from what happened in 1933, there is little reason for assuming that, while the dollar is falling, the trade balance be-

[8] A further possibility would be to move both prices in opposite directions.

[9] This being the margin the Treasury might deem it necessary to control the flow of nervous money. It would raise the difference between the gold points from roughly 1 per cent to about 31 per cent.

comes more favorable. But once a certain stability of the dollar is reached around the gold export point, the trade balance might begin to turn more favorable, at least for a certain length of time. The corresponding demand for dollars would tend to raise the exchange value of the dollar, the technical limit of this upward movement being, of course, the gold import point. But since such a rise in the exchange value of the dollar tends to check the tendency of the trade balance to become more favorable, we could not expect the dollar to reach the gold import point, unless the trade balance had already been favorable before the spreading of the gold points took place. If the latter is the case, we have two forces pulling the exchange value of the dollar in opposite directions. A frantic repatriation of short-term balances by foreigners might temporarily outweigh the active status of the trade balance and drive the dollar to the gold export point. Deprived of its power it would give way to the influence of the active trade balance on the dollar. The dollar would rise on the exchanges, but its rise would probably be checked as soon as the exchange rate reached a point at which foreign holders of short-term dollar balances found it advisable again to liquidate their funds. Thus the exchange rate would have to be expected to settle somewhere between the two gold points. To speak more precisely, it would settle at a point at which the demand for dollars arising from the net export of goods would be satisfied from the proceeds of the liquidation of short-term balances. No gold would flow into the country, nor would any gold leave the country. All that would happen is that the gold that had originally come in on account of the establishment of short-term balances would get more firmly into the hands of the United States. This could go on until the short-term balances of foreigners are exhausted.

The situation is different, however, if the trade balance becomes passive, in connection with a pronounced prosperity at home. Neglecting, for a moment, the possibility of an increase in the purchase of American securities by foreigners, the dollar would tend to reach the gold export point. Since under those circumstances the risk of exchange losses is absent or minimal, short-term balances might be set up again by foreigners to a certain

extent. The limit of this process would be set by whatever foreigners regard as a forbidding risk of loss on the exchanges.

The introduction of the element of long-term capital movements into the picture warrants a further modification of the above reasoning. In so far as booms are connected with quick rises of stock prices, foreigners might, as they did in the past, invest capital in American securities. If they do, we have another factor tending to keep the dollar above the gold export point, at least if the demand for dollars is great enough to overcompensate the depressing effect of a passive trade balance. Whether and to what extent we should have to expect such a purchase of securities depends very much on the degree to which investment opportunities seemed more attractive in the United States than abroad. Judging from past experience, the chief attraction seems to be the chance to make speculative profits rather than the level of dividends or interest derived from the securities.[10] The inflow of long-term capital therefore depends largely on the intensity of the boom here, as compared with abroad. It depends also upon how genuinely long-term, subjectively speaking, the investment is meant to be. If it should be true that a considerable fraction of the foreign investment in American securities is merely a veiled form of keeping short-term balances, such investment may not be expected to go very far, considering the fact that the larger the volume of foreign investment, the stronger is the tendency of the dollar to move away from the gold export point, and the shorter the time of the investment, the more sensitive it becomes to the risk of exchange losses.[11]

The same optimistic conclusions cannot be reached when we consider the other alternative, namely, the spreading of the gold points through lowering the gold buying price. Assuming an

[10] The fact that foreigners have, on the average, not liquidated their assets when stock prices broke down after the boom of 1936–37 does not prove that their investments were meant to be truly long-term commitments. The shortness of that boom may have come to them as an unexpected event, after which they decided to keep their holdings until better chances to liquidate should arrive.

[11] This point would be of little significance, however, if most of this veiled short-term investment in American securities should take place only in those periods in which the stock market shows quick upward movements of prices.

equally drastic widening of the difference,[12] the immediate effect would most likely be an inflow of short-term balances, since the dollar must be expected to rise on the exchanges. But owing to the fact that the dollar could not move far above the gold export point—depending upon what foreigners consider a forbidding risk of loss on the exchanges—such an inward flow of short-term balances would not be apt to go very far. On the other hand, there is, in contrast to the former case, no repatriation of short-term balances to be expected. This is true as long as the exchange profits resulting from the rise of the dollar outweigh the fear of potential losses in case the dollar should fall in the future. What balances there are would stay in the United States, unless the forces abroad which had led to the flight of balances ceased to operate or became markedly weaker.

Now let us consider the trade balance. If we assume it to be active,[13] the net demand for dollars will tend to keep the dollar at the gold import point. In this case the trade balance would most probably tend to become less active, since under those circumstances the dollar will have risen substantially on the exchanges. A further and more important reason why the dollar would be unlikely to reach the gold import point is the fact that the repatriation of short-term balances would tend to become strong. The exchange rate, therefore, might be expected to settle at a point at which the rate of repatriation is equal to the rate of the active trade balance.

If we assume the trade balance to be passive the dollar tends to stay at the gold export point as far as the influence of this factor alone is concerned. This downward force would, within certain limits, be offset by speculative inward movements of short-term balances. Thus, while in the case of an active trade balance the upward force is furnished by this very balance, it arises here from the potential inward movement of new short-term funds.[14]

So far we have been discussing what may be called the mere

[12] By lowering the gold buying price from $35.00 to about $26.50 an ounce.

[13] And no net export of long-term capital to take place.

[14] It is perhaps unnecessary to discuss the modification which the inclusion of long-term capital movements would entail.

"mechanical" effects of the lowering of the gold buying price. There exists an opinion that such a measure might cause a general deflationary movement at home, based on psychological grounds. There is a great likelihood that prices in industries relying heavily on exports would fall, and in these particular cases there is no need for the assumption of a psychological cause. Rather it is a potential spread of this price fall over the bulk of industries which we have in mind when we speak of a deflation caused, by and large, by psychological moments. Whether or not such a deflation would actually take place cannot be decided here. The fact that the devaluation of 1933 did not produce a substantial inflationary rise of the price-level cannot be regarded as a proof that the anxiety over a possible deflation in the case of an opposite change of the dollar price of gold is unfounded. If such a deflationary movement of commodity and stock prices should be the result, it would certainly be a high price to pay for an effort to control the movement of short-term balances. It is mainly for this reason that the former alternative seems preferable to this one, and not because of the anxiety about the possible depressing influence on commodity exports which a lowering of the buying price of gold might imply.

It remains to say at least a few words about the probable effects of a scheme to lower equally both the buying and the selling price of gold. Generally speaking, such a measure would not offer any solution as to the control of the movements of short-term balances. In particular, it would not lead to a decrease in the amount of short-term balances held here. Since the gold points are not widened, there is no reason for foreigners to withdraw their balances. On the contrary, if there are foreigners considering repatriation, we might expect them to postpone such action if a rise of the dollar is believed by them to follow the lowering of the gold price. Moreover, if foreigners expect the dollar to rise, speculative purchases of dollar balances are likely to take place.

If the reduction of the gold price is drastic, repercussions on the status of the trade balance have to be considered. As long as the dollar is rising on the exchanges, we have a speculative factor

working in the direction of greater exports and smaller imports of commodities. Against this speculative force stands the influence of the lowering of the barter price of gold, which becomes effective as soon as the dollar rises but which may be outweighed by the former speculative force as long as the dollar actually keeps going up. Once the dollar exchange rate settles at a certain point, the trade balance may tend to become passive. Whether there will be a gold outflow depends upon the relative magnitude of the trade balance and the capital balance.

Again these "mechanical" effects of the reduction of the gold price have to be confronted with the possible psychological reaction along the lines indicated before. Since this measure would invite the same problems, perhaps even more clearly so, and since at the same time it fails to cope with the issue of the control of short-term balances, it is undoubtedly inferior to either one of the above-mentioned forms of spreading of the gold points.

There is one more aspect of a program of lowering the dollar price of gold which deserves to be mentioned here. If, against all odds, the United States should indulge in a drastic reduction of the dollar gold price, the question arises as to what would be the probable reaction of the other countries. It is fairly safe to assume that they would not fall in line with such a policy, for to them this would mean foregoing an advantage in the field of foreign trade which a lowering of the dollar price of gold would give them.

But assuming it came to a multilateral reduction of the currency prices of gold, a new issue would arise in the form of the consequences which such an action might have as to the rate of production of new gold. In all probability the effect, in the long run, would be merely a decline in the rate of growth of mining operations.[15] As to the next few years, there is reason to assume that even a lowering of the gold price to pre-1932 levels would not seriously reduce the world-output of gold. It is true that the en-

[15] Measured in millions of ounces, the world-output of gold (not including Russia) in the last decade has been as follows: 1929: 18.5; 1930: 19.4; 1931: 20.6; 1932: 22.1; 1933: 22.7; 1934: 23.5; 1935: 25.2; 1936: 27.8; 1937: 29.8; 1938: 31.9 (figures taken from the latest issues of the *Federal Reserve Bulletin*).

hanced price of gold of recent years has stimulated the exploitation of deposits that were formerly submarginal.[16] But the significance of this point is relatively small in view of the fact that, first, the rise in the currency price of gold is only one among a whole series of factors accounting for the recent expansion of gold mining[17] and, second, that by far the most important producing area, namely, that of South Africa, must be regarded as being well able to meet the challenge of a lower currency price of gold.[18]

We may conclude, therefore, that the prospective results of a policy to lower the currency price of gold the world over do not seem very promising. Its depressing effects upon the output of gold and, indirectly, on the absolute amount of future gold imports of the United States and other countries would be too small to justify such a measure.

[16] See Philip S. Brown, "The Anomalous Course of South African Gold Mining since 1925," *Journal of Political Economy*, April, 1938, p. 200. Perhaps the clearest case is furnished by Australia where "expansion is attributable principally to the reworking of old tailing piles and the exploitation of known deposits which became profitable as a consequence of the very great depreciation of Australian currency in terms of gold" (*ibid.*, p. 201).

[17] According to Brown, the increase in the production of gold since 1932 the world over is attributable to one or more of the following factors: "(1) The enhanced price of gold which stimulated the exploitation of deposits that were formerly submarginal; (2) technical improvements in mining, such as the development of deep-dredging, of air-conditioning and other devices to permit very much deeper lode mining, and of the art of geophysical surveying; (3) the coming into production of previously discovered deposits that would have been developed without the incentive of a higher price of gold (e.g., those of the U.S.S.R., of the Philippine Islands, of West Africa, and of New Guinea); and (4) new discoveries, some of which are attributable indirectly to the enhanced price of gold and some of which are not" (*ibid.*, p. 200).

[18] Besides Brown, other students of the South African gold-mining industry have pointed out that this industry has, in recent years, indulged in a policy of reducing the average grade of ore milled. This policy must be suspected of being related to the high currency price of gold since 1932. A fall in the price of gold or a sharp rise in the costs of mining might well lead to a temporary increase of output, owing to a rise in the average grade of ore milled unaccompanied by a corresponding reduction in tonnage. See F. W. Paish, "Causes of Changes in Gold Supply," *Economica*, November, 1938, p. 379; also, T. Balogh, "Some Theoretical Aspects of the Gold Problem," *Economica*, August, 1937, p. 274.

THE COLONIAL LOAN-OFFICE SYSTEM IN NEW JERSEY

DONALD L. KEMMERER
University of Illinois

IN COLONIAL times there were, broadly speaking, two types of paper money: the bill of credit and the loan-office bill. The more common was the bill of credit, which is similar to the more recent Civil War "greenback"—simply inconvertible money issued to pay the expenses of a military expedition or even the current costs of government. Provision was usually made for the retirement of this money by taxes over a period of years, but all too often new emergencies arose or were thought to arise, with the result that the bills had both longer life and lower purchasing power than was originally intended. The less common variety of paper money was the loan-office bill or land-bank note, which bears some resemblance to a modern bank note. Loan offices and land banks were the nearest things to a modern bank that existed in Colonial America. The loan offices did not receive deposits or discount drafts, but they did lend up to a maximum amount in loan-office bills on real estate security.

The land-bank idea appears to have had its origin in William Potter's book, *The Key to Wealth*, published in London in 1650.[1] Private land banks were planned and perhaps tried on a small scale in South Carolina and Massachusetts during the last quarter of the seventeenth century.[2] Barbados tried the scheme without success in 1706.[3] An attempt in South Carolina in 1712 to finance an expedition against the Tuscarora Indians by establishing a public land bank or loan office was a dismal failure in practice[4] but apparently a great success in theory,

[1] C. J. Bullock, *Essays on the Monetary History of the United States* (New York, 1900), p. 30. There were, of course, variations of the land-bank idea, perhaps the most famous being the Massachusetts Land Bank of 1740.

[2] A. M. Davis, *Currency and Banking in the Province of Massachusetts Bay*, "American Economic Association Publications" (3d ser.), I, No. 4 (1901), 68–78; A. Del Mar, *History of Money in America* (New York, 1899), p. 78.

[3] R. Chalmers, *History of Currency in the British Colonies* (London, 1893), p. 51.

[4] C. Nettels, *The Money Supply of the American Colonies before 1720* ("University of Wisconsin Studies in the Social Sciences and History," No. 20 [Madison, 1934]), p. 261.

for in the next few years colony after colony experimented with the plan—Massachusetts in 1714, Rhode Island in 1715, New Hampshire in 1717.[5] New Jersey gave it serious consideration in 1716[6] but abandoned the idea possibly because of the shady reputation of the assemblyman sponsoring it. Pennsylvania, in 1723, next made the experiment, and is generally conceded to have had the most success. Before the end of the Colonial period every colony but Virginia had tried the scheme. In fact, Benjamin Franklin proposed it to Grenville to be used in place of the Stamp Act, but Grenville had put it aside, "being besotted with his Stamp Scheme which he rather chose to carry through."[7]

Before examining the operation of the system in New Jersey let us glance at the conditions existing at the time of its establishment. The first settlers in New Jersey, as in most provinces, saw very little specie because there was little in circulation. The people in the colony probably had as much money as their financial situation warranted, but since they spent money for imported goods as fast as they earned it, and, in addition, frequently went into debt, they thought there was a money shortage and resorted to various methods of overcoming it. Until 1698 every East New Jersey tax law provided for the payment of taxes in produce at certain prices. Both East and West New Jersey passed laws raising the value of the various Spanish silver dollars, English crowns, ducatoons, etc., by about one-third.[8] A debased halfpence was issued for a few months in West New Jersey,[9] and the eastern proprietors at one time debated a plan for registering all instruments of debt—like bonds, bills of exchange, and mortgages—and of letting them circulate as money.[10] Consequently, New Jersey money was at a considerable discount in terms of sterling, £167 being required to buy £100 sterling in 1703, according to Robert Quary.[11] If New Jersey had obeyed Queen Anne's famous proclamation in 1704, which forbade the colonies to value foreign coins in the colonies over a third

[5] Bullock, *op. cit.*, p. 34. [6] *New Jersey Archives* (1st ser.), IV, 271.

[7] "B. Franklin to W. Franklin, October 11, 1766" (unpublished Galloway MSS, University of Pennsylvania Library).

[8] A. Leaming and S. Spicer, *Grants, Concessions, and Original Constitutions of the Province of New Jersey (1664–1682)* (Philadelphia, 1752), pp. 81 ff. and 285.

[9] F. B. Lee, *New Jersey as a Colony* (New York, 1902), I, 246.

[10] "Proposed Amendment to East New Jersey Concessions," No. 25 (miscellaneous MSS, New Jersey Historical Society Library).

[11] *New Jersey Archives*, II, 516.

higher than they were valued in England, holders of coins would have suffered a loss and a serious deflation would have occurred.[12] In 1709 the colony issued its first paper money, £3,000 in bills of credit, to help finance an expedition against Canada. This was followed two years afterward by a second issue of £5,000 for another Canadian campaign. The bills were to be retired by taxes, but this took place more slowly than was anticipated. The maturity date was postponed in 1714 and more bills were issued in 1716,[13] resulting in the New Jersey exchange rate for pounds sterling going to 178 in 1717.

The English authorities instructed Governor Hunter to discourage further issues, and during the years 1717–22 a genuine attempt seems to have been made to retire the colony's paper money. Once, when there was delay in withdrawing bills from circulation, the assembly voted to pay the holders 8 per cent interest for the period past maturity.[14] The result was currency deflation with its attendant discomforts. The exchange rate dropped to 145 in 1719.[15] At a Burlington town meeting in 1722 it was voted that silver should pass at proclamation money rates, i.e., £133.[16] Governor Burnet reported an instance of people paying their taxes with jewelry because they could get no other specie.[17] The revenue act of 1722 permitted taxes to be paid in wheat at a price below the market rate, and there were nearly three hundred lawsuits for the collection of debts in one county.

Shortly after the New Jersey assembly met in October, 1723, petitions were presented setting forth the need for paper currency. The fact that Pennsylvania had set up her loan-office system in March and that New York had recently issued a batch of bills of credit no doubt gave further impetus to this popular desire. The assembly spent most of the session preparing a satisfactory measure, and finally, on Novem-

[12] C. M. Andrews, "Current Lawful Money," *American Historical Review*, XXVI (1919), 73. By deflation I mean a decrease in the supply of money relative to the demand for it, so that a fall in prices results. Unfortunately there is no study of Colonial New Jersey prices although there are such studies for New York and Philadelphia; consequently, I am forced to depend on other evidences of deflation and inflation, the chief one being a fragmentary collection of exchange rates which I have accumulated.

[13] *New Jersey Laws* (New Jersey State Library), Vol. I.

[14] *Ibid.*

[15] *New Jersey Archives*, XIV, 125.

[16] "Burlington Town Book" (unpublished MSS, in Burlington Masonic Home), p. 27.

[17] *New Jersey Archives*, V, 87.

ber 30, 1723, the bill establishing New Jersey's loan office or public land bank received the governor's signature.

The law called for £40,000 of legal-tender money in denominations ranging from one shilling to three pounds—an amount more than enough to relieve the currency stringency. Loans were to be made in amounts of not less than £12 10*s*. or more than £100. Loan offices were set up in each county and allotted a quota, based on the county's population. Borrowers had to give as security a mortgage on land or houses at least twice the value of the loan. The interest rate of 5 per cent, a saving over the current rate, which was 8 per cent, was calculated to make it easy for poor people to borrow. A moratorium was laid on all debts for four months, until March 25, 1724, to allow time for the new money to get into circulation. The borrower was expected to pay back one-twelfth of the principal and interest annually, and if he failed to make his payments on time, it was considered as judgment against him. If he did not pay within the succeeding thirty days of grace, foreclosure took place. If the money still could not be collected, the taxpayers of the county were obliged to stand the loss.[18]

Almost everyone in the province appears to have favored the scheme. Members of the legislature voted themselves duplicate pay and generous bonuses and the governor received a present of £1,000. The wealthy landholders apparently did not oppose the bill; in fact, James Alexander, surveyor-general for the proprietors, helped draw it up. The explanation is that they did not then fully realize the dangers of inflation, but they could see that the new system would lessen the taxes they had to pay on improved lands—an important source of revenue in a province where foreign trade was inconsequential. The taxpayers gained in two ways: the public debt of £4,000 was paid off and taxes were greatly reduced. The second point needs explanation. Although the law stated that the interest payments should be used along with the principal to retire the notes, the assembly refused to destroy the paper money paid in for interest.[19] For the next thirty years the costs of government were met—at first partly, later wholly—out of these interest payments. As it is sometimes loosely phrased, "the government was run on the profits of a banking business." This was, of course, one of the great attractions of the loan-office system.

Alexander wrote former Governor Hunter in December, 1723, "I hope there may be no discount, for the Utmost Care was taken in

[18] *New Jersey Laws* (Trenton State Library), Vol. I.

[19] *New Jersey Archives*, V, 104, 165, and 190.

passing the Act that there should be none."[20] But the legislature was unable to amend economic laws. The notes which were issued at proclamation money rates (really a 25 per cent discount from sterling)[21] passed at a further discount of one-sixth in terms of New York money, which was the best in the middle-colonies area at the time. They passed at par with the money of Pennsylvania, but it was not long before they were preferred.[22] The value improvement in New Jersey money was due to collections being conscientiously made and foreclosures being promptly instituted. Furthermore, New Jersey money became acceptable in all three colonies, whereas Pennsylvania notes were not generally received in New York or New York notes in Pennsylvania. The result was that New Jersey notes were much in demand for making interprovincial payments. It was estimated a few years later that only a third of the New Jersey money actually circulated in New Jersey.[23] By 1728 New Jersey money was at a premium of 15*d.* to the pound over New York money and Governor Montgomerie was boasting that half of the notes had been retired.[24]

The pains of deflation, however, were again felt. People began to complain of the growing scarcity of money. Taxes became increasingly difficult to collect, the two treasurers having barely £250 between them in 1730.[25] The stage was thus set for the entrance of another paper-money law.

The second loan-office bill calling for £20,000 was enacted in 1730. It differed from the first law only by providing that the loans were to run for sixteen instead of twelve years and that the principal paid in before the first eight years might be loaned out again.[26] The king's approval was necessary before the law could be put into operation, and this was not obtained until 1732.

Meanwhile the economic pressure on the debtors became worse. By 1732 only £10,000 of the original £40,000 remained in circulation. More bills were introduced to reduce the legal rate of interest and to

[20] W. A. Whitehead, "East Jersey Index," No. 115 (MSS in New Jersey Historical Society Library).

[21] J. Alexander, "New Jersey Money" (MSS in New York Historical Society Library).

[22] *New Jersey Archives*, V, 155.

[23] W. Douglass, *Discourse concerning the Currencies of the British Plantations in America*, "American Economic Association, Economic Studies," II, No. 5, 314; *New Jersey Archives*, V, 289.

[24] *New Jersey Archives*, V, 193 and 251.

[25] *Ibid.*, XIV, 380, 437, 440, and 443.

[26] *New Jersey Laws*, Vol. I.

relieve "poor distressed Prisoners for Debt."[27] A law regulating the fees lawyers might charge was passed, its enemies summarizing it as a popular declaration: "We will pay no Law Fees. We Will have no Lawyers. We Will pay no Customs fees. Neither will we pay our Debts. But we'll punish every man that shall pretend to sue for his Own."[28] A petition from Monmouth County requested that the paper money of New York and Pennsylvania be made legal tender in New Jersey.[29]

The assembly had no intention of losing this opportunity for profit to the government and for saving to the taxpayers. It drew up and passed a third loan-office bill, this time for £40,000 but in every other way resembling the second law. Its confirmation in England was delayed until 1735 because of the opposition of some Bristol merchants.

With the issuance of the notes available under the second loan-office act,[30] the premium of New Jersey money over New York money vanished. When news of the third act became public, no New York merchant would take New Jersey money, according to Chief Justice Lewis Morris, until it was learned that the law would not go into effect until the king gave his approval some time in the future, whereupon New Jersey money passed at 7½ per cent less than before.[31] Whether a real estate boom that took place around New Brunswick soon after the second loan law went into operation was a result cannot be said, but at least the chronology is worth noting and the increased money in circulation was doubtless no damper on speculation.

The third law was the last one New Jersey was able to obtain for forty years, although it did not cease trying. For some time the British merchants had been protesting to their government about the Colonial legal-tender paper money whose depreciation frequently ate up much of their profits. The House of Commons in 1740 passed a resolution directing all governors to enforce proclamation-money rates and forbidding them to sign acts calling for further emissions of legal

[27] *New Jersey Assembly Minutes, July 23, 24, August 8, 1733.*

[28] *New Jersey Archives*, V, 393.

[29] *New Jersey Assembly Minutes, July 23, 1733.*

[30] The average (median) of the loans made in Burlington and Hunterdon counties was smaller for the second loan than for the first, but larger for the third than for the second. This might be expected. The figures, respectively, are £35, £32, and £34 for Burlington; unknown, £20; and £25 for Hunterdon (Public Record Office, Trenton).

[31] "L. Morris to Board, October 4, 1733" (MSS in W. L. Clements Library, Ann Arbor, Mich.).

tenders unless the act carried a clause suspending its operation until the king gave his approval. Henceforth the Board of Trade condemned all paper-money laws on general principles. Lewis Morris, a shrewd, wealthy, and domineering old man who hated paper money, became governor of the province and enforced Parliament's resolution to the best of his ability.

By 1740 agitation for another loan-office law began to make itself felt.[32] Once more there were laws for the relief of those imprisoned for debt, to reduce legal fees, and to enable creditors to recover from absconding debtors.[33] The assembly, knowing Morris' feelings on the matter, offered him a generous bribe to sign a new loan-office act, which he spurned, pointing out among other things that he would lose more by the lessened purchasing power of his salary than he would gain by the bribe.[34] Four years later, because he had vetoed another loan-office bill just before he died, the assembly refused to pay his heirs the last two years of his salary.[35] Morris' successor, Jonathan Belcher, signed a loan bill but it was disallowed in England. By 1753 the last loans had fallen due, most of the bills had been retired, and the colonists were paying taxes again, much to their annoyance. The effects of deflation were less serious this time, however, because nearly £20,000 of bills of credit had been issued during the 1740's to finance New Jersey's part in the War of Austrian Succession.[36]

Although New Jersey issued £347,000 in paper money during the French and Indian War, none of it was loan-office bills. Three times the assembly petitioned to put this much-liked system into practice again and three times it was turned down.[37] After the war the currency act of 1764 further reduced their chances of securing a loan-office act, yet the deflation that followed from the retirement of thousands of pounds in bills of credit each year made any system that would put an end to money scarcity and high taxes at the same time seem highly desirable. So, New Jersey tried three times more and, after two re-

[32] *New Jersey Assembly Minutes, January 9, 1739; May 7, 1740* (bill to establish two trading companies in New Jersey [New Jersey State Library]).

[33] *New Jersey Laws*, Vol. II.

[34] *New Jersey Archives*, XV, 273–75.

[35] W. Whitehead, *The Papers of Governor Lewis Morris* (New York, 1852), pp. 315–20.

[36] *New Jersey Laws*, Vol. II.

[37] *New Jersey Archives*, VIII, Part I, 183 and 197, and Part II, 36 ff. and 95 ff.; IX, 113.

fusals by the English crown,[38] it finally obtained a loan act in 1775 after agreeing not to make the bills legal tender.[39] By the time the law was put into operation the Revolutionary War had begun.

The loan-office system was not without virtue. It was first introduced to alleviate the distress of deflation and served to oil the machinery of exchange which was creaking badly, because the lack of specie made barter necessary. The system converted New Jersey into a taxpayers' heaven for thirty years, if that is any virtue. Finally, in a period when paper money was almost certain to be used in one form or another, the great danger was a runaway inflation, as was evidenced by the experiences of such colonies as Massachusetts, Rhode Island, and South Carolina. The loan-office system prevented this by providing funds for retiring the bills and to some extent for limiting expansion. This seems to have been the plan's strongest point.

The loan-office system had numerous faults. It put the tax burden directly on the shoulders of the small-farmer class in the community, so that the wealthy landowners paid almost none of the costs of government. When it was realized that taxes would have to be paid once more, it was feared they would be an enormous burden, and it took the assembly three years to decide who should bear most of it. After the French and Indian War the imposition of the war taxes in addition to their own seemed particularly intolerable to a generation that had nearly forgotten what taxes were.

The chief drawback of the system, however, was that it produced alternate waves of inflation and deflation. The pattern was sufficiently perfect to satisfy a fairly orthodox quantity theorist: a large issue of paper money, unfavorable exchange rates for importers, a real estate boom, bonuses to those governing the colony, and other evidences of prosperity; then, as the notes were retired, debtors began to feel economically pinched, interest rates seemed high, lawyers' fees excessive, and debtors' prisons filled up; next, legislation to relieve the situation was passed, chief of which was another loan-office act; whereupon the cycle was ready to begin again. It did not take the colony's creditor classes long to see the results of inflation or the debtors long to feel the consequences of deflation and to protest. Few, if any, saw that the loan-office method of suddenly expanding and gradually contracting the paper-money supply was largely responsible for both evils.

[38] *Ibid.*, X, 115 and 196.

[39] *Ibid.*, p. 557; *New Jersey Laws*, Vol. IV.

BOOK REVIEWS

Das Problem der sozialökonomischen Synthese. By JOHAN ÅKERMAN. ("Publications of the New Society of Letters at Lund," No. 21.) Lund: C. W. K. Gleerup, 1938. Pp. 329.

This book is devoted to methodology. Its main objective is to investigate the different currents of economic thought with respect to the assumptions and procedures used and to find out how far they are capable of contributing to a synthetic approach. The author distinguishes between three principal approaches to economic science: equilibrium economics, time economics, and institutional (in the author's terminology, sociological) economics. Equilibrium economics is the "classical" theory of market equilibrium as expressed in the theories of marginalism. It has the merit of having pointed out explicitly the general interdependence of all economic quantities but is incapable of explaining the causal processes of economic change. Such explanation is attempted by time economics which comprises, in the author's classification, the studies on problems of economic fluctuations, whether statistical or theoretical. Although more realistic than equilibrium economics, these studies suffer from a certain arbitrariness in the construction of models, from recourse to the concept of "normal" which is an implicit acknowledgment of equilibrium economics, and from insufficient attention paid to changes in the structure of social institutions. Institutional (sociological) economics deals with the effects of changes in social institutions upon economic life. Its difficulties are those of sociological generalization.

The author proceeds to describe a number of bilateral syntheses. There are the syntheses of equilibrium economics and time economics as exemplified in the business-cycle theories of Haberler, of Pigou, and of Hansen, or in the sequence analysis of J. M. Clark, Kuznets, Lundberg, Frisch, Tinbergen, etc. As examples of a synthesis of equilibrium economics and institutional economics the author quotes the works of Max Weber, of Pareto, of Tugan-Baranowski, and of Veblen. A synthesis of time economics and institutional economics is found in the studies of the economic impacts of changes in population, in the studies on the social effects of business cycles, in studies of the conditions of the labor market, etc. Such bilateral syntheses have produced,

in Professor Åkerman's opinion, important contributions, but they are incomplete. A complete synthesis of all three approaches requires a solution of a series of fundamental methodological problems.

Professor Åkerman distinguishes between two kinds of economic analysis: the causal and the alternative. The first is concerned with causal processes of change, the second with cross-sections at given moments of time. A complete synthesis in economics has to start from a clear delimitation of (1) the institutional type of the economic system (*Wirtschaftstyp*) which is under consideration, of (2) the type of causality (*Kausalitätstyp*), i.e., the type of the organs of economic action and of their psychological reactions, and of (3) the type of processes (*Verlaufstyp*) which depends on the particular combination in existence in the economic system of elements of planning and of competition. The effects of planning are explained by the method of analysis of alternatives—those of competition by causal analysis. Thus the author hopes to point the way toward achieving a realistic economic science.

Professor Åkerman's book is not easy to read. It requires from the reader a very thorough knowledge of the literature on economics, statistics, and sociology. Therefore it cannot be recommended to the beginner in economics. The beginner might also be misled by certain misrepresentations in the details of the huge literature discussed. It is definitely misleading to state that the theorem of the equalization of the marginal utility of a dollar's worth of each commodity implies that an increase in income would lead to a proportional increase in purchases of all commodities (pp. 141–42), or to maintain that there exists a vicious circle because demand schedules are at the same time derived from observing reactions to prices and serve to explain the price on the market (p. 141). Similarly misleading are the statements that the theory of historical materialism is based on the concept of the economic man (p. 88), or that the Marxist position is that all economic science is purely partisan (p. 99). Nor is it true that the Cambridge theory of "disutility of effort" cannot be given up without either giving up the theory of marginal utility and turning toward a Casselian formulation or turning toward an analysis of group behavior (p. 49). In spite of these slips, which are not important for the general thesis of the author, Professor Åkerman's book provides instructive and stimulating reading for the trained economist. It does not, nor does it intend to, offer a positive solution of the problem of economic synthesis. Such a solution

can scarcely come from a methodological discussion, but such discussion, by making the economist conscious of the nature of his problems, can help to improve his strategy of attack.

OSKAR LANGE

University of Chicago

The Ruling Class. By GAETANO MOSCA. Translated by HANNAH D. KAHN; edited and revised, with an Introduction, by ARTHUR LIVINGSTON. New York: McGraw-Hill Book Co., Inc., 1939. Pp. xli+514. $4.50.

Mr. Livingston has rendered a signal service in making available in English a work which is of more importance at the present time than when it was first published in 1896 as the *Elementi di scienza politica.* As one reads Livingston's translation today, hardly anyone can fail to recognize that the cylical movements of human institutions which have so repeatedly delivered the lives of the masses into the hands of men of violence are not simply of historical interest but instead are a phenomenon of the immediate present as well. Only now when Mosca is a very old man can one really appreciate the ominousness of his conclusion that it is only under a rare combination of circumstances that the balance of social forces produces "juridical defense" (government by law with due process).

Mr. Livingston's analysis of Mosca's concepts in the Introduction to the present volume is such an excellent piece of work that it certainly merits publication separately. It has the merit of avoiding much in Mosca which is repetitious, even if necessarily so. Further, in Mosca so much care is taken to give illustrations to document the exceptions as well as the principle itself that it is sometimes difficult to follow the main argument. This difficulty is accentuated by a certain circularity of reasoning produced by Mosca's principle that each type of political organization of society has within itself the seeds of the next, from which in turn is propagated eventually any form which may arbitrarily be assumed as the starting-point of the cycle. This sometimes mildly baffling combination of method and principle is reduced to order, clarity, and conciseness in Livingston's Introduction.

Mosca conceived of his political theory primarily as the adaptation to all countries and all times of Taine's theory of the causes of the French Revolution. Mosca's theory of the ruling class differs from that of Marx in that it does not find an exclusively economic base for

the power of the predominant class. The theory has obvious similarities to that of Pareto, but the evidence indicates that they were derived independently, although Mosca's theory antedates that of Pareto.

The embryonic type of the ruling class, according to Mosca, is simply the warrior. There very early develops even in tribal society the class of arms bearers who are able to extort from the rest of society all but the barest minimum of subsistence, acting in the role either of conquerors or of protectors. As soon as an agricultural economy which necessitates a sedentary existence has developed, a feudal society emerges. The feudal hierarchy based essentially on military prowess is eventually succeeded through evolutionary development by a bureaucracy which in the beginning is likewise of military origin.

Although the ruling class in the beginning owes its domination to violence, Mosca shrewdly observes that the stability of the rule of a given class depends upon the success of that class in imposing upon the ruled masses a belief in a religion, patriotism, or myth which contains in it a justification for domination by the ruling class. This is due, as Livingston phrases it, to the "fact that human beings more readily defer to abstract principles that seem to have an abiding validity than to the will of individual persons."

Eventually, with the development of a more complex society, specialization takes place within the bureaucracy so that a professional standing army develops, which although a part of the ruling class as far as its officer personnel is concerned, is nevertheless the disciplined, nonpolitical instrument of a larger and more diversified ruling class. This class under the most favorable circumstances may represent widely separated social interests, such as those of industrialists, bankers, landowners, and the church. Mosca sees the gravest danger to the modern type of social organization in the tremendous expansion in the size of modern armies to the point where they tend to represent within themselves all the conflicting political and social elements of society.

There is always present in society an inexorable tendency toward over-bureaucratization through multiplication of the personnel of the bureaucracy, with consequent increasing burden of taxation and lessening of efficiency. The end product of over-bureaucratization is reached in the triumph of absolutism in the form of dictatorship which represents once more the ascendancy of pure force as the determinant of the ruling class.

Mosca produces a remarkably able defense of political conserva-

tism, as he develops his curious combination of an analysis of the nature of the ruling class with a defense of the superiority of an organic ruling class minority over rule by the majority which he holds must end in anarchy followed by totalitarianism. To Mosca the most advanced form of the state is that in which the ruling class represents all the important social forces, in which the recruiting for the ruling class of those of superior intelligence from the masses is not prevented by barriers of caste, and, finally, in which the essential element of authoritarian violence has been reduced to a minimum by the professionalization of the army.

CALVIN B. HOOVER

Duke University

National Bank Failures and Non-failures: An Autopsy and Diagnosis. By HORACE SECRIST. Bloomington: Principia Press, 1938. Pp. xix+309. $4.50.

Professor Secrist's study is devoted to seeking out an association between the relative size of various accounts or combinations of accounts of banks and the failure rate or early failure. The study is based upon balance-sheet data for individual national banks published for one date each year by the Comptroller of the Currency.

The study shows that the resources of banks which failed declined more than the resources of banks which did not fail, and that the deposits of banks which failed declined more than the deposits of banks which did not fail. That is to say, banks which have failed have commonly been banks which were subjected to runs or banks in communities which were subject to adverse clearings. This conclusion confirms the general opinion which has long prevailed.

Professor Secrist has found that failure rate and early failure are positively correlated with the capital ratio of banks. He concludes that "conventional thought" which assumes "that the higher the ratio the less the chance of failure" is thereby disproven. But is it not possible that the banks which experienced a high failure rate had characteristics which caused this high rate in spite of the high capital ratio? There is reason to believe that the great impact of bank failures came upon agricultural banks because of the great agricultural depression; upon small banks which were rendered superfluous by a revolution in transportation and by other technical changes and changes in ways of doing business; and upon banks with less ready opportunity to borrow, rediscount, and sell assets. These banks in general had the characteristic of high capital ratios. In the absence of such high capital ratios, failure

would probably have been still earlier and still more catastrophic. High capital ratios were helpful in limiting failures (1) in so far as other banks and the Federal Reserve banks were more ready to lend, (2) in so far as higher capital ratios maintained the confidence of depositors and thus prevented runs, and (3) inasmuch as the higher the capital ratio the smaller the percentage of assets which had to be disposed of in order to meet withdrawal of a given percentage of deposits. No one has maintained that a high capital ratio is a cure-all for the bank-failure problem. Professor Secrist has done nothing to prove that it is not a major helpful factor in limiting such failures.

Changes in the power of the Federal Reserve banks to lend to the banks and the inauguration of deposit insurance will minimize bank failures resulting from runs and adverse clearings. Banks will be able to secure any amount of cash necessary to meet the demands of their depositors so long as the central banking authorities judge the value of their assets to be equal to or greater than their liabilities. Thus, the only common cause of failure will be depreciation of asset value below the volume of liabilities. From this it must be obvious that the chief determinants of bank failure in the future will be the risk of depreciation in the value of assets and the ratio of equity to total assets.

HOMER JONES

Washington, D.C.

The Income Structure of the United States. By MAURICE LEVEN, assisted by KATHRYN ROBERTSON WRIGHT. Washington: Brookings Institution, 1938. Pp. x+177. $1.50.

This volume is concerned not with estimates of the national income but, first, with the way in which income is distributed between various types and groups of people and, second, with the way in which the distribution of income changed between 1929 and 1937. In dealing with the distribution of income, statistics are presented on occupational differences in incomes, industrial and geographic differences, differences due to age, sex, and color, and finally differences which are the result of group action by businessmen, farmers, and laborers. Second, in dealing with changes in the distribution of income, the sources of change are discussed under the head of the business cycle, industrial disputes, technological progress, and stranded populations. (The latter heading deals with the effect on income structure of such groups as the Appalachian mountaineers.) Statistics are also pre-

sented concerning the changes since 1929: in wages paid by various industries (but with special emphasis on manufacturing industry); in incomes or earnings of physicians, lawyers, steel workers, urban families, and those with incomes high enough to be ascertainable adequately from income-tax returns; and, finally, in the various sources of income and the amount going to broad income groups such as wage-earners and farmers.

To the reviewer it is not clear for whom this volume is intended. The statistics which have been brought together are interesting and well presented, but they are hardly likely to appeal to the specialist, if only because there is next to no discussion of their reliability. Yet because the volume contains national income estimates only incidentally and practically without discussion (nothing is said, for example, regarding the role or meaning of capital consumption) and because a broader study[1] was published six months after the volume under review, the volume is hardly to be recommended for general use.

The text accompanying the statistics is uneven. Just before a discussion of labor-union action which noted the existence of union restrictions on supply (p. 75), we are told that "there is no way for the trade association to keep new enterprises from entering [the] field" (p. 71), if a price agreement has led to excessive profits. The broadening of secondary income distribution to include savings and investments and the identification of "used" income with consumption (on the ground that savings are sometimes lost) seems confusing (chap. vii). The contention that high incomes suffered more in the depression than those in the lower brackets is demonstrated: first, by the obviously fallacious method of showing that the percentage of the national income received by those with incomes over $5,000 fell more drastically than the national income; second, by arguing that the average incomes of those having incomes over $5,000 had fallen "drastically" in 1936 to 76 per cent of the 1929 average, when two paragraphs later it is stated that the national income in 1936 was 65 per cent of its 1929 average; third, by presenting, without reference to source or without specifying whether or not capital gains are included, figures which seem to prove the contention; and, fourth, by presenting estimates two pages later which indicate that people with incomes from $500 to $1,000 in 1929 were worse off in 1936 than those with incomes of $4,000–$5,000 in 1929 were in 1936 (pp. 125–28). The

[1] National Resources Committee. *Consumer Incomes in the United States*. Washington: Government Printing Office, 1938.

reviewer admits confusion as to just what did happen. But these criticisms relate to the very worst examples. By and large the text is adequate and the volume interesting within the limits of the subjects covered.

HENRY H. VILLARD

University of Minnesota

Tanker Freight Rates and Tankship Building: An Analysis of Cyclical Fluctuations. By T. KOOPMANS. ("Netherlands Economic Institute," No. 27.) Haarlem: De Erven F. Bohn N.V., 1939. Pp. xii+222. Hfl.2-.

Statistical price analyses of agricultural products are now a commonplace in American economic and statistical literature and some years ago began to appear in European publications. Realistic analyses of factors underlying movements in production and prices of industrial products or services have, however, been exceedingly rare. Industrial prices constitute one of the great unexplored areas left for econometric research.

This study by Dr. Koopmans is distinctive not only for pioneering a new area in the industrial field but for the skill and discrimination with which the descriptive and theoretical framework of analysis is built up ahead of the statistical investigations and for the caution with which the statistical tool is used.

He considers the character of demand for tanker services in the light of the dominance of world-markets by large oil companies, of their activities in tanker operation, and of the peculiarities of the methods of chartering in the tanker market. The repercussion of freight-rate charges upon the competitive position of large oil companies owning or chartering tankers versus independents without tankers is carefully considered, as are the counterbalancing forces of low freight costs on consumers' demand for oil versus the effect on the position of the big companies vis-à-vis the independents. The conclusion is that the demand curve for oil transportation is very inelastic.

He next demonstrates, both theoretically and by statistical measurement, that the short-time supply curve of tanker transportation is inelastic at times when the existing ships are fairly fully occupied but is very elastic at times of depression when many ships are laid up. In addition to this supply factor, the movement of rates is affected by long-time shifts in operation costs and by intermittent sharp upsurges

of demand, due to a rush to cover future needs at times when a physical shortage of space is imminent or feared.

The long-time supply shows a marked response of tanker construction to freight rates. Since it takes a year or more to complete construction once ordered, this produces a characteristic cycle of overproduction and underproduction, similar to the "cobweb cycles" familiar to American students in hogs, beef cattle, etc., and previously developed for general shipbuilding by Einarsen and Tinbergen. "The essence of the cycle-generating mechanism considered is the simple fact that ships are not available in sufficient number when they are most needed, and are then ordered on such a scale that in due course there are too many of them." Three complete cycles in construction occurred between 1922 and 1938, with the peaks in tonnage under construction usually four to five times as high as the preceding troughs.

The cycles in freight rates following the cycles in production are of the cobweb type but are characterized by long low periods of depression and short sharp periods of upswing, due to the nature of the short-time supply curve previously mentioned.

The international Tanker Pool, in operation from 1934 on, was effective in raising freight rates although many tankers were laid up. It employed a flexible device of compensating owners for withdrawing ships from use but left the decisions as to withdrawal to each owner. The increased returns stimulated new construction before the next cyclical shortage occurred and hence moderated the subsequent cyclical rise in rates. Whether the Pool will continue so successful depends on whether it eventually brings about too excessive an expansion of building.

This report deserves careful study as an excellent example of combined institutional, theoretical, and statistical analysis, by all who aspire to objective work in the field of industrial prices and price behavior.

MORDECAI EZEKIEL

Washington, D.C.

Probability, Statistics and Truth. By RICHARD VON MISES. Translated by J. NEYMAN, D. SHOLL, and E. RABINOWITSCH. Edinburgh: William Hodge & Co., Ltd., 1939. Pp. xvi+323. *12s. 6d.*

The book is an English translation of an enlarged new edition of Richard von Mises' very popular *Wahrscheinlichkeit, Statistik und Wahrheit.* As in the previous edition, von Mises' renowned theory of

probability is presented in language that may be understood by students who possess only a meager knowledge of mathematics and statistics. With the exception of a few very elementary mathematical expressions, this English edition avoids the use of formulas, and for those derivations that have been omitted because of their mathematical complexity the mathematically trained student is referred to von Mises' *Wahrscheinlichkeit und die Anwendung in der Statistik und theoretische Physik*, his published lectures, and numerous articles.

In the first lecture von Mises explains his definition of probability. As most students of statistics know, he adopts the frequency approach to probability. Following the method of John Venn (*The Logic of Chance*, 1866), von Mises defines probability as the limit of the relative frequencies of particular attributes in an unlimited sequence of observations. His great contribution to the foundation of the frequency theory is the assumption that this sequence of observations, or in his terminology "collective," satisfies his principle of randomness, which is equivalent to the principle of impossibility of a gambling system. According to this principle, the limits of relative frequencies of the particular attributes are the same in all partial infinite sequences of observations, obtainable from the collective by selections based on position or place. In his second lecture he describes those operations on collectives which yield new collectives, and he shows how the corresponding probabilities for the collective change in accordance with the accepted fundamental laws of probability. Following the custom of most writers on probability, von Mises in his third lecture answers the critics of the frequency approach and of his principle of randomness. Here he briefly describes how the recent investigations of Copeland and Wald provide a proof of the consistency of his theory. The fourth lecture deals with the "Law of Large Numbers," both historically and in the light of von Mises' own concept of collectives. In the fifth lecture applications are made to statistics and the theory of errors. Statistics of sex distribution and deaths are used to illustrate the Lexis theory. The sixth lecture is of particular interest to the student of physics and chemistry, for it sketches and discusses the development of statistical physics during the last century.

These lectures of von Mises might be regarded as required reading for any beginner in the field of statistics. His concept of a collective and its properties is extremely useful in the application of probability. It is not necessary to agree entirely with von Mises that the notion of a numerical probability must be restricted to apply only to collec-

tives in order to benefit from an understanding of his methods. In fact, one might even belong to the class von Mises calls nihilists and believe that the theory of probability begins and ends with the undefined concept probability and still utilize his notion of a collective in the application of the theory. On the other hand, von Mises' exposition is so clear and his realistic arguments so convincing that he might convert so many apostles to the frequency approach that other possible applications of probability may be overlooked.

WALTER BARTKY

University of Chicago

Dynamic Theory of Wealth Distribution. By MONTGOMERY D. ANDERSON. Gainesville: University of Florida Press, 1938. Pp. x+243. $3.00.

In fairness to the author I should say at the outset that this book has found an unsympathetic reviewer. It does not seem too optimistic to say that even though economists may not be unanimous about the best definitions of income, investment, and savings to adopt, they are at least coming to appreciate the merits of the assumptions on which the various definitions are based. Now Mr. Anderson enters the arena equipped with definitions of saving and investment that depend not on income but on the amount of capital in the economy and its rate of turnover. The onus of proving that these definitions will yield more clarity than confusion is a heavy one, and the best course for the reviewer seems to be to set out the elements of the theory and let the reader judge for himself.

First of all, Mr. Anderson disposes of the "orthodox" view that saving = investment = income − expenditure-on-consumption in summary fashion. He identifies investment with profits, whence expenditure on consumption is identically equal to wages and salaries, which is absurd. This reasoning compels him to search for the truth in new territory.

His new definitions are as follows: Let Y = value of the total goods in existence at any time and R their "average rate of turnover." Then saving is defined as $-R'Y$, and investment RY' (the primes indicate derivatives with respect to time). Thus the rate of increase in the money value of total transactions is given by

$$Z' = RY' + R'Y = \text{investment} - \text{savings}.$$

By a hedonistic argument involving the total satisfactions due to a unit of goods and a unit of money, respectively, this formula can be related to the equation of exchange, and Mr. Anderson shows that investment is proportional to $M'V$, while saving is proportional to MV'. This happy result makes many of the most serious statistical problems in economics evaporate.

"Economic" interest is defined as the "net income from all capital (wealth) whether borrowed or owned" (p. 73). "For society as a whole it is the same thing as net increase of capital or net profit" (*ibid.*). The instantaneous rate of interest is then given by Y'/Y.

The discussion of wages is on more conventional lines and is concerned largely with the relation of wage rates to population. Then follows a critique of the Ricardian doctrine of rent and an exposition of why the Ricardian theory is not the same thing as a theory based on the assumption that the production of the economy is a homogeneous function of the first degree of land, labor, and capital.

The final chapters present official statistics of the inequality of incomes and discuss the problem of achieving greater equality. The author's general conclusion seems to be that "there are valid objections to an equal distribution of income but one cannot contemplate the *mathematical*[1] possibilities of equality without concluding that the goal of *less* inequality is a desirable social ideal" (p. 225).

A. SMITHIES

University of Michigan

The Formation of the New England Railroad Systems. By GEORGE PIERCE BAKER. Published under the joint auspices of the Graduate School of Business Administration of Harvard University and the Railway and Locomotive Historical Society. Cambridge: Harvard University Press, 1937. Pp. xxxi+283. $3.50.

This book, which has the subtitle of *A Study of Railroad Combination in the Nineteenth Century*, is designed as the first volume of a study on railroad combination in New England and covers the period down to 1900, by which date the growth to "comparative maturity of the present-day New England systems" had been completed. Three purposes are stated to have determined the choice of material presented: "to organize and present a chronicle of events of economic and historical interest; to form a historical background for the consideration of the present-day problems of railroad combination in New

[1] My italics.

England; and to present material which may lead to further knowledge of the forces behind the economic institution of railroad combination."

The outcome is a detailed and scholarly account of all known acquisitions of control through one method or another, centering about the ten main systems which developed during this period. Attention is concentrated on the time and the particular means by which control was secured. The years of the greatest activity in making acquisitions are between 1868 and 1875 and in the middle eighties. It is found that the lease was employed three times as frequently as any other means, financial control and consolidation coming next in order among the nine forms under which the various means are classified. The use of the holding company device was very slight. This marked preference for the lease was shown in every decade and by all but one of the main systems. In addition to the advantage of comparative freedom from legal obstacles permitted by the lease, its frequent use is said to indicate a sellers' market because "there was nearly always at least imagined competition for the control of a minor property."

Of more general interest is the analysis of the conditions and motives back of what the author calls the "irresistible force working toward combination." In the case of each acquisition, there is a careful effort to explain the situation which led to this action. In summarizing the results of the analysis, it is concluded that the minor roads most commonly gave up control for the sake of the surer income and protection from possible loss thus obtainable, while the acquiring roads were generally motivated by the desire to increase their traffic or to retain traffic that otherwise might be lost.

The motives back of the original construction of the railroads, though frequently discussed, are dealt with in no such systematic manner. One gathers the impression that there was first the desire of communities to secure the advantages of rail transportation and subsequently, particularly on the part of larger communities, the desire to break the monopoly of a single railroad and secure competition. The railroads, on the other hand, were always seeking to maintain or to extend monopolistic control in any given territory. Though at times, chiefly in the later years, they supported construction that involved an aggressive invasion of another road's territory, more frequently their support of new roads was essentially defensive in character, even if the strategy of the situation demanded an offensive defensive by building new lines before somebody else or with the idea of exerting pressure on a rival to check competitive moves. The long-run outcome of the struggle, though the concluding period will be covered in the

second volume of the study, was a victory for the railroads' effort to secure monopoly over the local communities' struggle to prevent this. The part played by the legislative authorities in this outcome is only occasionally and incidentally suggested in this volume. It is to be hoped that in the second volume, in which the author promises "to discuss at greater length the economic forces which made themselves felt" during the past century, this topic will receive due attention.

CHESTER W. WRIGHT

University of Chicago

Toward Full Employment. By HENRY S. DENNISON, LINCOLN FILENE, RALPH E. FLANDERS, and MORRIS E. LEEDS. New York: Whittlesey House; McGraw-Hill Book Co., Inc., 1938. Pp. xiii+297. $2.50.

The program of *Toward Full Employment*, presented under the joint authorship of four prominent business executives consists primarily of various fiscal devices influencing different money streams. The book should have considerable value, because of its authorship, in making one type of economic analysis acceptable to other businessmen. The book will be a disappointment, however, to economists hoping to find an appraisal of economic doctrines in the light of business experience or an analysis founded primarily on such experience. Little new evidence is offered in support of the program advocated.

The first part, by Mr. Leeds, starts with the proposition that the government should and will offer employment during periods of extensive unemployment. A flexible budget system is proposed to secure efficiency in the emergency expenditures. Mr. Leeds considers details of the organization and procedure of a government agency to implement a flexible budget and the items of public expenditure which could be properly increased. He also stresses the importance of a government employment office to facilitate re-employment in private industry and to provide information useful in determining the type, location, and timing of government emergency projects.

The second part, by Mr. Flanders, deals with the relation of the credit system to business fluctuations. He considers the nature and function of bank deposits, criteria and methods of credit control, and the various causes of economic instability. Speculative excesses, self-generative cycles in purchases of durable goods by consumers and industry, cumulative repercussions of even small changes in inventory

policies, natural variations in agricultural yields, and adverse political forces are all recognized as reasons for business fluctuations. Oversaving is admitted as a possibility, but Mr. Flanders is not willing to accept without critical examination and more conclusive evidence than has yet been presented "policies directly or indirectly based on the oversaving and overinvestment theories" (p. 99). Mr. Flanders relies on improved central bank policy and a general acceptance of government spending as beneficial during depressions to lessen future fluctuations. He holds that a loss of business confidence owing to government policies on labor, taxation, and competition was a fundamental cause of the depression of 1937–38.

In the third part, Mr. Dennison presents a very interesting study of the tax structure in terms of relative burdens on consumption and savings. Though he does not accept a general oversavings theory, he believes excess savings are probable at certain times and he advocates a shift of one billion dollars from taxes on the consumption stream to taxes on the savings stream because "we have the economic maturity to do so; the savings stream is sufficiently rugged to stand it; the effect on economic stability will be favorable; and the measure comprehends its own warning signals and safeguards against excesses [high interest rates and difficulty in raising capital]" (p. 201). Mr. Flanders takes exception to the emphasis on restricting savings by taxes. Specifically, Mr. Dennison proposes a flat corporation income tax equal to the normal rate in the personal tax, restoration of the exemption of dividends from the normal personal tax, increases in the personal income tax to meet revenue deficiencies, possible increases in inheritance taxes, reduced taxes on commodities, and the maintenance with modifications of the "tax on payments into corporate reserves" (p. 233). Taxes are appraised only as they affect the consumption or savings branches of the income stream.

DAN THROOP SMITH

Harvard University

Economics and Cultural Change. By RUSSELL A. DIXON and E. KINGMAN EBERHART. New York: McGraw-Hill Book Co., Inc., 1938. Pp. xi+550. $3.00.

This book suggests comparison with the well-known *Introduction to Economic History* of Professor N. S. B. Gras. Like the latter, it is a combination of, or a compromise between, a standard general European economic history and a philosophical-historical—or perhaps socio-

logical—discussion of economic evolution, by "stages," of the character of Müller-Lyer's *Phasen der Kultur* (published in English under the title *The History of Social Development*). The problems and difficulties of such a work are familiar to all students. The chief issue is that of the reality of any single linear sequence, in contrast with a theory of pluralism in culture development and/or recognition of "cycles," more or less repetitive.

Professors Dixon and Eberhart give us a short general introductory chapter (18 pp.) on "Economics and the Cultural Pattern," followed by a treatment of economic history in accord with a scheme involving four main stages—primordialism, feudalism, commercialism, and industrialism, each with two main subdivisions. The treatment of the last three, occupying three-fourths of the volume, deals essentially with west-European economic history from the early Middle Ages to the present, and the schematism raises no excessively serious questions. (Three pages are devoted at the start to the origins of feudalism, bringing us down to conditions in England at about the time of the Norman Conquest.)

The treatment of primordialism (pp. 23–130) gives a different impression. Its two chapters of approximately equal length are entitled "Hunting Culture," and "Village Culture." The former comes down to the Neolithic period, though in the authors' chronology (p. 77) fifteen thousand years out of the total of about thirty-five thousand are captioned "mesolithic." As regards a discussion in fifty pages of paleolithic man (three subperiods—lower, middle and upper—of, respectively, two hundred and fifty thousand, fifty thousand, and twenty-five thousand years [p. 25]), one may perhaps not be too harshly critical. It may be admitted to be worth while to give students some such an introduction to economic history, and certainly not much in the way of either scope or accuracy would be possible, even in vastly greater compass. It must be said, however, that our authors fail to make clear, not to say emphasize, the wide variety of historical sequence which really happened, the vague and scanty character of the best knowledge, and the corresponding limitations of any general statement. Their style and manner give the contrary impression.

It is in connection with the chapter on "Village Culture" that the most serious questions, if not objections, come to mind. The general impression of linear progress from the first use of polished stone implements to the eleventh century is hardly less than fantastic. The bulk

of the chapter is still dealing essentially with "origins." After some forty pages dealing with primitive village life, we are given a "summary" of less than a page and then, as a sort of appendage to the chapter, a treatment in eleven pages of "temple town culture," which covers economic history from the earliest records of Egypt and Babylonia through Hellenic and Roman civilization and the early Middle Ages—all as episodes or stages of primordialism. Greece and Rome are barely mentioned; the former is not in the Index. The decline of classical civilization and the whole period of the "Dark Ages" in Europe are passed over without mention, except for a half-page under the origins of feudalism. This seems, to put it mildly, a summary way of getting around one of the most fundamental problems of history—that of decadence.

The criticisms suggested are rather of the nature of sins of omission. As to what the authors have actually given us, the treatment seems competent—within the limited capacity of this reviewer to judge—and is very readably presented. Most of the chapters carry bibliographies, which also seem (with the same reservation) to be well selected and adequate for the type of students who will presumably use such a book.

FRANK H. KNIGHT

University of Chicago

Middlemen in the Domestic Trade of the United States, 1800–1860. By FRED MITCHELL JONES. ("Illinois Studies in the Social Sciences," Vol. XXI, No. 3.) Urbana: University of Illinois, 1937. Pp. 81. $1.00.

There are few important fields in our economic history about which we know less than that dealing with the organization of domestic trade. The writers of the nineteenth century, both businessmen and economists, paid little attention to the subject, and few agencies gathered statistics, so that what remains available today is extremely meager and widely scattered through a very varied range of sources, many difficult of access. Thus the problem of fitting together the fragments so as to obtain a well-rounded and accurate picture of the changes that occurred in marketing organization is extremely difficult. Hence, any new study in the field, even though very modest in scope—the main text of this is but sixty pages—is welcome.

The author instead of concentrating upon some one group has

chosen to cover all the varied group of middlemen, the successive chapters dealing with wholesalers, factors and brokers, auctioneers, and retailers. The result is a useful summary survey, but on most of the topics covered the limited extent of the treatment makes the really significant additions to the existing fairly available accounts rather meager. The details gathered from hitherto unused sources are enlightening, and the chapter on factors and brokers is the most useful of all. In his search for material the author has covered a wide variety of sources, but a more extensive survey of some of these sources, notably newspapers, business directories, and local histories might have yielded much more material.

CHESTER W. WRIGHT

University of Chicago

Service Charges in Gas and Electric Rates. By HUBERT FRANK HAVLIK. ("Columbia Studies in History, Economics and Public Law," No. 435.) New York: Columbia University Press, 1938. Pp. 234. $2.75.

In this study Dr. Havlik has made available the first extended consideration of an important phase of the practice of price differentiation. The volume contains a carefully documented account of the nature, development, and alleged advantages of the service charge, together with a discussion of the validity of including various types of costs therein. There is also an evaluation of the objections and alternatives to the service charge and of the desirability of variable or uniform service charges. There are four appendixes: one reviews various estimates of the size of customer costs; a second considers the effect of increased appliance use on residential load and diversity factors; a third describes various attempts to measure the relation of rates and consumption; and a fourth examines the relationship of income status to the use of appliances.

The author defines the service charge (p. 178) as a "genus of fixed charges, whose several species are basically intended to recover all or some part of customer costs." But in practice the rate device called a service charge often includes a part of demand costs. Moreover, there is no uniformity in current attitudes as to the appropriate ingredients of "customer costs." The primary reason for the use of a service charge is stated to be the correction of situations in which small consumers "do not pay enough to cover the costs of serving them" (p. 40), and the possible usefulness of the charge in leading to "promotional" rates em-

bodying sharp reductions for additional blocks of service. Objections to the service charge, Dr. Havlik finds, are based largely on a misunderstanding of the reasons for its use, and on objections to the larger bills to small customers which generally follow its introduction. The popular belief that small consumers are poor consumers, however, is found to be largely erroneous, especially in the case of gas; small users are frequently well-to-do "casual" or "convenience" users, who do less cooking, washing, or ironing in the household, and who more frequently absent themselves therefrom than do the poor.

The author in general takes the position that the service charge should be used, although he holds that it should not be too "burdensome" upon small users. Where there is "considerable variation in demands and consumption of customers, and in density of population" (p. 183), the service charge should include only "directly traceable" customer costs such as interest, taxes, depreciation, and maintenance of the meter and service line, expenses of meter reading, customer accounting and collection, plus that share of general office and utilization expense arising from "the customer's continued connection." Where greater homogeneity of customer demand, use, and density exists, however, a larger share of the expenses and fixed charges of distribution, and of general expenses, may be included, with "due regard" for public relations and customer opposition.

This volume provides a useful study of data and points of view concerning an interesting problem. In the reviewer's opinion, however, the analysis would have been materially strengthened had the author attempted a closer integration of this phase of rate-making with general differential price theory. Such economic and social concepts as "cost," "discrimination," "fairness," "monopoly," and "best exploitation of the market," are employed without explicit examination of their meanings. Again, there is only one sentence (p. 59) of explanation of the alleged desirability of relating utility rates to long- rather than to short-run marginal costs. Some important issues are not developed in clear-cut fashion. It seems to be assumed, for example, that a service charge, or some charge involving a comparatively high rate for small usage, is generally necessary to permit low "promotional" rates for additional consumption. This may be true if the promotional portion of a rate schedule is not dictated by profit-making considerations. From an entrepreneurial standpoint, however, if a low rate for additional consumption represents a profitable exploitation of demand elasticity, it remains so even though there is not a high initial charge (called by what-

ever term) for small usage or for the mere privilege of a service connection. Conversely, the profitability of a high initial charge is not contingent upon the use of lower follow-on rates.

The difficult question of the incidence of benefits between different groups of consumers, while referred to as a problem in a "social theory" of rates, is finally dismissed with the statement that we need "some sort of social accounting" to permit the maximizing of "satisfaction." Dr. Havlik recognizes that measurements in dollars do not afford measures of "gratification units"; but there is no reference to the literature relative to the role of value judgments in economics or to the measurability of "utility."

JOHN D. SUMNER

University of Buffalo

Public Utility Taxation in Ohio. By JAMES CARLTON DOCKERAY. ("Ohio State University Studies, Graduate School Series, Contributions in Economics," No. 2.) Columbus: Ohio State University Press, 1938. Pp. xiii+200. $2.40.

Exhaustive research studies are most satisfactorily classified according to purpose, and this is especially true of the present work which is very limited in its scope. It is mainly, if not entirely, a statistical exposition of the Ohio state tax system as applied to public utilities. There is little evaluation and no comparison. The material should be of considerable value to the Ohio State Tax Commission, and perhaps to others closely identified with the state of Ohio. It does not pretend to be, and is not, a contribution to economic theory.

The first third of the book traces the historical development of public utility taxation in Ohio. This historical study follows the temper of the remainder of the work and is rather more encyclopedic than a reader with only a general interest would require. It presents the familiar picture of flagrant underassessment under local autonomy and the gradual evolution of centralized administration in the hands of state officials, with the development of the unit rule, classification, and special treatment of public utilities. Chapters iv and v deal with valuation methods and chapter vi with apportionment. Chapters vii, viii, and x relate to the excise tax and to the taxation of intangibles and railroad equipment companies, respectively. Chapter ix is titled "Burden Analysis," and is founded on elaborate statistical calculations comparing the tax bur-

dens carried by various utility groups. Inasmuch as the tax system relies heavily not only on property taxation but also on the income results of operations, it is hardly surprising that great variation in "burden" is found to exist, whatever basis for comparison is used. The original basis for public utility taxation in Ohio, as elsewhere, was the general property tax locally administered. Ohio was no exception to the general trend to attack this situation on two fronts: (*a*) to modify the traditional general-property-tax framework through the application of ability to pay principles and (*b*) to unify control by the establishment of a state tax commission. In fact it appears to have been one of the leaders in delegating authority to the officials charged with administering the tax system. An interesting chart facing page 64 shows the effect on valuation levels of the introduction of unified administration under the Ohio Tax Commission. In one year (1911) the property valuations increased by from 200 per cent to 500 per cent. While an interesting phenomenon, such a wholesale increase in base does not of necessity make for either greater justice or increased revenue: an equitable and productive property-tax structure can be founded on percentage valuation as well as on full valuation. It would seem, therefore, that the chart, as it stands, hardly justifies the implication that the new structure was more equitable than the old. The facts probably do justify such a conclusion, but the statistical studies as presented leave the reader without any conviction one way or the other. In short, the study is basically a compilation of statistical data rather than an evaluation of a tax system.

The delegation to the Ohio Tax Commission of considerable discretion in the matter of assessment presents an interesting problem for further study. A reading between the lines would indicate that the author was not entirely a free agent as his study required special permission from the state authorities. Nevertheless, whatever the reason, it is unfortunate that no attempt was made to explore and evaluate a discretionary system of taxation. The commission apparently has broad discretion in the weights to be given to assessed valuation as against capitalized earnings. The author's conclusion that a high revenue level has been achieved with a low volume of litigation and complaint is not only unsupported by any factual presentation but is not followed by any discussion of whether or not the goose that does the most squawking loses the fewest feathers. The delegation of authority to administrative officials, while common enough in England, has of

course always been viewed with considerable suspicion in this country. It is, however, a basic trend in American government, and New York and Ohio are examples of states which are feeling its full force.

STEWART YARWOOD MCMULLEN

Northwestern University

A Theory of Hotel Room Rates. By HOWARD BAGNALL MEEK. Ithaca: Department of Hotel Administration, Cornell University, 1938. Pp. iii+120. $2.00.

This study, which develops a theory of price determination for hotel-room rates by refinements of neoclassical analysis, performs several useful services. First, it directs the attention of hotel proprietors to price theory which they may find useful in understanding the pricing process and in setting room rates. Second, it explores the adequacy of theoretical analysis for explaining price determination in an industrial situation with which the analyst is sufficiently familiar to be able to judge the validity of various assumptions and to estimate the effects of relaxing them in the direction of greater realism. Third, by putting theory to the test of conformance with reality, it develops new combinations of analytical techniques and lays the foundation for empirical investigations.

The general procedure is to simplify the preliminary exposition by adopting familiar assumptions: short-term adjustments, static state, economic decisions, complete knowledge, and homogeneity of product. The analysis is then progressively refined in the direction of reality by relaxing each of these assumptions that is not in essential harmony with the facts and evaluating the effect upon conclusions.

Three kinds of situations are examined: (1) monopoly, as exemplified by the single hotel in an isolated community; (2) perfect competition, allegedly applicable to the nation-wide resort market and to large metropolitan markets; and (3) monopolistic competition, illustrated by a small number of hotels competing in an isolated market.

For the monopoly situation the mathematical apparatus for determining the optimum rate and occupancy is constructed by positing a linear, negatively sloping particular demand function and a hyperbolic unit-cost function of short-run avoidable costs.

Analysis in terms of perfect competition is regarded as appropriate for a first approximation to average rates for resort and metropolitan hotels. By assuming homogeneity, an aggregate demand schedule is

conceived for the national resort market. A corresponding aggregate supply schedule is constructed by arraying hotels according to supply-determining cost, i.e., unit costs avoidable by leaving rooms vacant. The average rate determined by the intersection of these two schedules is used as the bench mark from which the price of a given room in a particular hotel is calculated by adding algebraically a rate differential for each peculiar characteristic. The rate differential for a characteristic is analogously determined by the intersection of its aggregate demand curve and its market supply curve, based upon the avoidable unit expense of providing it. Season differentials are determined by time shifts in the demand schedule.

Upon this competitive analysis of average homogeneous rates and average rate differentials is superimposed a monopoly analysis of the individual adjustment. Assuming complete knowledge and negligible influence upon the total situation, the operator estimates his particular demand schedule and determines his optimum occupancy and rate by reference to his short-run, unit-cost curve. The differentials that he applies for various room and date characteristics are, however, determined competitively in the aggregate market, rather than monopolistically as in the hotel's average rate adjustment. A parallel procedure is employed in the study of the metropolitan market.

Imperfect competition analysis is used to explain rates when few hotels serve an isolated community. The optimum rate and occupancy for the individual hotel is determined by its particular demand schedule and its unit-cost curve. Although each hotel's demand schedule depends upon the others' rates, errors that lead to a price situation that fails to clear the market tend to be self-correcting by adjustments toward equilibrium.

The analysis is further refined by consideration of the effects of discontinuities in demand and supply schedules, dynamic changes, non-economic decisions, custom, ignorance, and group activity.

The validity and usefulness of a competitive analysis of resort and metropolitan markets in terms of aggregate supply and demand schedules is open to question. At least the procedure of superimposing a monopoly analysis upon the competitively determined average rate appears dubious. If monopoly assumptions are made, independent demand and supply schedules for the aggregate market cannot be constructed; for the quantity which will be supplied at each price will depend not on the price but on the level and shape of the demand schedule and of the cost curve of the individual firm.

Hence, the use of aggregate schedules implies assumptions of perfect competition and calls for a supply curve obtained by horizontal summation of the short-run marginal-cost curves of individual enterprises. The supply schedule used in the present study, however, is similar to Marshall's particular expenses curve except that costs are less inclusive, since only net avoidable expenses are used. This method is correct only if marginal cost is regarded as constant and equal to the net avoidable cost per unit at expected occupancy, or if the avoidable unit cost is regarded as the marginal cost of providing a block of rooms.

The implicit assumptions of infinitely elastic partial demand and constant marginal cost are clearly incompatible with the subsequent monopoly analysis which employs a negatively sloping particular demand curve and a U-shaped marginal cost curve to determine the individual hotel's rate differential from the rate for the aggregate market. The procedure of recognizing heterogeneity by means of rate differentials for each distinguishing characteristic yields a complex theoretical structure built on the dubious assumption that the differentials are set by perfect competition in the aggregate market and are applicable to all hotels. Possibly a more usable theory could be developed by breaking the market into noncompeting groups of comparable hotels and making the entire analysis in terms of monopolistic competition.

JOEL DEAN

University of Chicago

A Study in English Local Authority Finance. By JOSEPH SYKES. London: P. S. King & Son, Ltd., 1939. Pp. vii+307. 12*s*.

Mr. Sykes wastes no time on preliminaries. The reader is confronted on the first page of the book with a chart showing very substantial increases in local government expenditures in England and Wales during the post-war period. The pages that follow present a careful analysis of expenditures, function by function, from 1919 to 1935, with full explanation of the reasons for increase in each category. The author finds the fundamental explanation for the growth of local expenditures in national legislation and national grants. Without these, local authorities would have lacked both the incentive and the capacity to expand their functions. A historical chart showing the relation between changes in average cost of local-authority houses and the expansion and contraction in housing grants is particularly revealing.

This factual study is followed by a discussion of the probable effect

on the national income of these growing expenditures and of the changes that have been made in the revenue system to meet them. The evidence presented is, in the nature of the problem, incomplete and indecisive, but the author's conclusion that the financial system contributed toward increasing rather than decreasing the national income is not without support. He believes that the disadvantages of increased local expenditure have been overemphasized and are clearly outweighed by the gains. His criticism is of details. The derating benefited some areas and some industries needlessly but was desirable for the basic industries. The block-grant formula has been an imperfect measure of need, but the grants on a revised basis might well be increased. Expenditures for housing have in some instances been extravagant, but the housing program as a whole has been useful and further expansion is desirable. Expenditures for health and education have been particularly beneficial, and increases would be profitable.

Mr. Sykes finally offers a program for the future—a program that would provide for even greater expansion in local government services. In this program the small units of local government and the local rates play a negligible part. The basic changes would be regionalization of the major local activities and the support of these activities from increased national grants and a regional income tax.

The value of this book lies, in the reviewer's estimation, primarily in the evidence, presented in some detail, of the economic and social value of the growing local-government services. Due recognition has been given to their shortcomings. The program for the future is perhaps too optimistically presented. Mr. Sykes freely acknowledges many difficulties, but he has not discussed the problem of cyclical variations in the yield of a progressive income tax, and his case against the local rates is not altogether convincing. It seems doubtful whether an institution as firmly rooted and as useful as the local rates can or should be thus lightly abandoned.

MABEL NEWCOMER

Vassar College

A Raw Commodity Revolution. By MELVIN T. COPELAND. ("Business Research Studies," No. 19.) Boston: Harvard University Graduate School of Business Administration, 1938. Pp. vi+97. $1.25.

This study first devotes a few hundred words to each of nineteen raw commodities, tracing its general history over the last two decades and then presents one chart for each of the same commodities to show

its price trends in the chief markets from 1926 to 1937. The "revolution" consists of miscellaneous factors that have produced a downward trend in many raw-material prices since 1925. Influences stressed are technological developments (the flotation process in metal recovery from ores, improvements in sugar cane, etc.), stimulation of new sources of supply during the World War and new developments since, and shifts in demand that have affected certain staples. Tariffs, quotas, control schemes, and monetary devaluation are among the devices mentioned, without profound analysis, as among the unsuccessful attempts to counteract the "revolution." Professor Copeland concludes that the fall in raw-commodity prices has been "largely the result of revolutionary changes already introduced in the fields of production," not merely to depression influences, and that "henceforth there will be a greater differential than there was before 1925 between raw commodity prices and finished goods prices" (p. 66). This conclusion may be true, but one wishes that it had been tested in a more workmanlike way. A comparison between raw-commodity prices and finished-goods prices cannot be established by data on raw-commodity prices alone. The analysis is generally sketchy and oftentimes superficial, the explanatory comments are not well documented (though the price data are backed by extensive tables with a convenient listing of sources), and an anti-New Deal bias introduces unsupported assertions on subjects that deserve more careful appraisal (e.g., "chilling political conditions" as the cause of the 1937 recession in the United States [p. 63]).

EUGENE STALEY

Fletcher School of Law and Diplomacy

Strikes: A Study in Quantitative Economics. By JOHN I. GRIFFIN. ("Columbia University Studies in History, Economics, and Public Law," No. 451.) New York: Columbia University Press, 1939. Pp. 319. $4.00.

This volume may be considered to be conclusive as far as it pertains to the analysis of trends of strikes in America during the years 1880–1937. The statistical information, much of which has not hitherto been accessible to readers, is conveniently presented in a continuous series covering the fifty-seven years. The title correctly indicates the restriction of the analysis to numerical data which can be studied with

reference to their own trends and their concurrences with other phenomena; for strikes are rightly regarded as phases of a complex interdependent system, in consequence of which they must be viewed as both cause and effect of other variables. Following a critical examination of the types of events which constitute strikes and the equally elusive units for measuring their volume, the author reviews their sources, duration, and results and examines their secular trends and notes their concurrences with business conditions. While the findings on these points are in agreement with those of other studies, the employment of more extended series makes the detailed presentation correspondingly more valuable. In addition to the bearing of unions and of the stages of the economic cycle upon the volume of strikes, the author deals slightly with the importance of the "political climate" and the ideologies of wage-earners, strikes being largely acts of unions (as measured by the number of stoppages and workers involved). The long-time effects of strikes are shown to be less evident than the immediate results; but even so, in only twelve of the fifty-seven years are more than 50 per cent of the strikes reported to be "successful." The study is supplied with ample statistical tables, charts, bibliographies, references, and an index.

Subsequent studies should pertain increasingly to such questions as the relation between the social organization and strikes and their long-run effect, not only upon the bargaining objectives and the union structure but also upon industrial cycles and centralization and lethal selection of establishments; for strikes, like other acts within the social system, produce unintended consequences which may be more significant than the intended results.

E. T. HILLER

University of Illinois

The Case for Experience Rating in Unemployment Compensation and a Proposed Method. By HERMAN FELDMAN and DONALD M. SMITH. ("Industrial Relations Monographs," No. 1.) New York: Industrial Relations Counselors, Inc., 1939. Pp. viii+66. $1.00.

In the current controversy over experience rating under state unemployment compensation laws, this monograph by two authorities in the field provides a capable defense of the position that some form of the reserve-ratio method is the most feasible. Beginning with the

argument that employers can do something to stabilize employment, the authors contend that the prospect of tax reduction will furnish an additional financial and psychological incentive. They confine the discussion to pooled-fund laws, since in their opinion the incentive features of the Wisconsin employer-reserve law "require too high a price." Experience rating is further defended on the ground that it is desirable to allocate the "social costs" of unemployment, and the criticism that chance factors will be important is minimized. Incidence of the payroll tax is considered in this connection, but scarcely adequately.

The second half of the study is devoted to a consideration of the weaknesses of proposed experience-rating schemes and a presentation of the authors' own plan. They would retain the reserve-ratio principle, since tax reductions will then depend upon the employer's making a good record "in absolute terms of an established standard of merit" rather than according to what other employers have done, as would be the case under industry-wide or state-wide comparisons. In practice, a simplified procedure is recommended of charging all benefits to the last employer only, instead of apportioning them to previous employers on the basis of wages earned from each. The possibility that this would be a deterrent to the hiring of casual labor is not considered as serious.

CHARLES A. MYERS

Massachusetts Institute of Technology

Before America Decides: Foresight in Foreign Affairs. By FRANK P. DAVIDSON and GEORGE S. VIERECK, JR. Cambridge: Harvard University Press, 1938. Pp. xiv+318. $3.00.

This volume on the central issues in American foreign policy is the outgrowth of a conference organized by the *Harvard Guardian*, an undergraduate magazine of the social sciences. Samuel Flagg Bemis, Clyde Eagleton, and Edwin Borchard contribute quite exemplary chapters on the main trends of American policy, collective security, and neutrality. Traditional international law is rather heavily represented in additional chapters by Payson Wild and Philip Jessup, and there are good statements on inter-American relations (Clarence Haring), strategic factors (G. F. Eliot), and public opinion (Fritz Marx). The volume is a bit on the conventional side. The Harvard boys are quite obviously not exposed to any doctrines that might be considered as academically subversive in the sense that they might

lead to doubt or even disrespect for the entire academic approach to war as a problem that breaks up nicely into certain subject-matter pigeonholes that can be neatly labeled as diplomatic history, international law, and political science.

Within its conventional framework, this is trustworthy material, ably presented. It is a very good one-volume introduction to relevant data and points of view for anyone who has not followed the more technical literature.

HARRY D. GIDEONSE

Brooklyn College

Korporative Wirtschaftstheorie. Edited by ERALDO FOSSATI. Jena: Gustav Fischer, 1938. Pp. x+126. Rm. 4.

The volume under review contains eleven essays on "corporative" economic theory by a group of leading Italian economists. Its aim is to provide the German-speaking world with an authoritative interpretation of current Fascist economic thought. The opening essay on "The Program of the New Italian Economy," written by the head of the Italian government himself in his usual blunt and trenchant style, sets forth the fundamentals of present-day Fascist economic policy. The basic element of that policy, readers are told, is economic self-sufficiency. It is economic autarchy which makes possible military preparedness and political independence—at present the Italian nation's highest political goals. The remainder of the volume consists mainly of variations upon this central theme. The minister of education, Giuseppe Bottai, analyzes what he calls the "revolutionary" strength of the Fascist corporation. Professors Arrigo Serpieri, Ugo Papi, Agostino Lanzillo, and Guglielmo Masci explain the details of the organization and functions of the corporative system, Professor Papi's scholarly account of the elements and the nature of corporative institutions and of the leading theoretical principles of corporative economics and Professor Lanzillo's clear description of the economic and social functions of the Fascist collective labor agreements and labor courts being particularly informative. In the remaining papers Professors Federico Chessa and Giovanni de Francisci Gerbino discuss the differences between Fascist economic policy and traditional liberal economics, and Professors Mario Marsili-Libelli, Giovanni Demaria, and Gino Borgatta analyze the details of recent Fascist monetary and fiscal policy. All the essays in the volume are clearly written, suggestive, and, for the

student of Fascist economic theory and policy, distinctly worth reading. Taken as a whole, however, the monograph is, to the non-Fascist reader, but another convincing demonstration that today Fascist corporative economics is not, as some of its apologists claim, primarily a means for the achievement of greater economic stability and social justice, but, rather, an effective instrument of economic control used by the totalitarian Fascist state for the achievement of its own immediate political ends.

WILLIAM G. WELK

College of St. Thomas

Italy's Foreign and Colonial Policy, 1914–1937. By MAXWELL H. H. MACARTNEY and PAUL CREMONA. New York: Oxford University Press, 1938. Pp. vii+353. $3.00.

This book reviews Italian foreign policy since 1914 by subjects. The reviewer considers it well done, but it is distinctly political rather than economic. The authors detail their political facts and opinions, with only the briefest reference to the economic. They exclude any economic evaluation of sanctions.

They concede Italy's "need" of colonies but show no familiarity with the costliness of colonial expansion. They note that as late as March, 1934, Mussolini denied in the most categorical fashion that Italy's expansion must take place by means of territorial conquest. In their opinion Italy was justified in thinking that France and Britain had recognized Italy's right to territorial expansion in Abyssinia, and that in her opposition Great Britain was moved by League principles and not by interest in Lake Tana.

In 1927 Mussolini declared: ". . . . The paramount duty of Fascist Italy is to prepare all her armed forces on land, on sea and in the air . . . . between 1935 and 1940, ... we shall be in a position to make our voice felt and to see, at last, our rights recognized." He felt he must seize Abyssinia before Great Britain rearmed. He believes in Nietzsche's will to power. The Mediterranean is not big enough for two masters, and Mussolini intends to dominate it even at the cost of war with the British.

Mussolini said of his commercial treaty with Germany: "Commercial treaties must not be looked at from a purely economic standpoint but also from a political point of view. I mean them always to be complementary to political treaties" (p. 155). The authors offer no ex-

cuses for ignoring the economic side, and no excuse is needed for their whole work tends to establish the current dominance of the political over the economic.

BENJAMIN B. WALLACE

Washington, D.C.

Handbook of Latin American Studies: A Selective Guide to the Material Published in 1937 on Anthropology, Art, Economics, Education, Folklore, Geography, Government, History, International Relations, Law, Language, and Literature. Edited by LEWIS HANKE. Cambridge: Harvard University Press, 1938. Pp. xv+635. $4.00.

The *Handbook of Latin American Studies* for 1937 is dedicated to the Instituto histórico e geográphico brasileiro. A large number of the special articles in this volume accordingly deal with Brazil. Those who have used the *Handbook* in previous years realize the effort involved in its preparation and will not need the editor's appreciative reminder of the constancy of the contributors in the face of administrative and teaching responsibilities and individual tribulations such as "nervous breakdown . . . . retire to a farm . . . . work in Brazil . . . . stricken with disease in Buenos Aires. . . . ."

The economist fares better than usual in the 1937 volume. Professor Phelps has prepared a long section on "Sources of Current Economic Information on Latin America" which should be extremely valuable for newcomers to the field. With the method of selecting items to be included in the Bibliography this reviewer is still not satisfied. In the Introduction the editor reiterates that the *Handbook* "aims to record . . . . the important publications of the previous year," that "it is a selective guide and not a comprehensive list." Yet one finds listed articles of a page or two in weekly magazines commenting on the text of a bill or providing extracts from the speech of a governmental official, which signify a low standard of selection. On the current basis it might be desirable to list more material from the better newspapers (i.e., *London Times* or *New York Times*).

The proofreading is a little better than it has been in the past. The name of only one contributing editor is misspelled in the Table of Contents and only one other is incorrectly listed in a section heading. The running heads for a ten-page section are incorrect. Inconsistency in form persists. Most of us will not object to having Simpson's *The Ejido* listed three times, for its importance relative to most other items is

easily in that proportion; but the listings are not uniform. However, we must concede that improvement has been made, for a year ago the book would have had a different number of pages and perhaps a different publisher in each listing.

The economist may well look on the *Handbook* as something more than a bibliographical aid. In its revelation of the surprisingly low output of worth-while publications in the Latin American field, the *Handbook* offers graduate students and mature scholars the challenge of an almost virgin field for research. Checked in many graduate schools by the faculty's admission of ignorance of the field, interest in research on Latin-American economic problems must arise spontaneously. Could there be a greater attraction for the venturesome student than the *Handbook's* disclosure of the opportunity and the lack of competition?

SIMON G. HANSON

Carnegie Institute of Technology

Capital Investment in Africa: Its Course and Effects. By S. HERBERT FRANKEL. New York: Oxford University Press, 1938. Pp. xvi+487. $4.00.

This is an important study, begun in connection with the African Research Survey, in a field hitherto largely unexplored. Its author is professor of economics in the University of the Witwatersrand, Johannesburg, and it deals with the portion of the African continent south of the Sahara.

The book is statistical. There are over a hundred tables in the body of the text—many being closely printed and some so extensive as to require folding charts—as well as additional charts and maps at the end of the volume. Professor Frankel, therefore, has supplied his readers with an enormous quantity of data, much not obtainable elsewhere in convenient form, and covering not only capital investment but trade and even public finance. Owing to the manner in which the text is broken by tables and material relegated to footnotes, some of the chapters are not easy to read.

As may be expected in view of its scope, the study is more thorough in certain portions than in others. The Union of South Africa, and especially that country's gold-mining industry, receive considerable attention, but information on some other areas and industries is less complete. The author states that his object has been "to present the facts, and to let the facts speak for themselves," but his discussion is en-

lightening. European colonization enthusiasts might peruse with advantage what is said on the economic position of the mandated territory of South West Africa, while the section on railway finance may interest American students of transporation. Undoubtedly, however, many readers of the book will wish that more had been attempted in the way of interpretation.

Certain features of the approach have to be appreciated. The desirability of raising production standards in the native areas is taken for granted. When it is remembered that in the past this process has been accompanied by the breaking-up of native tribal life and the introduction of an exploitative relationship between the negro and the white man, with results that few people regard as entirely satisfactory, doubts can be cast on this assumption. Second, some of the discussion in the book is colored by the favorable attitude toward gold-mining companies which is common in Johannesburg. Thus, there is criticism of mining taxation without it being made clear how this ties up with the main topic of capital investment.

At times brevity seems to be carried too far. For instance, the Chartered Company, which developed Rhodesia, is spoken of as having "successfully deferred for half a generation" the payment of a dividend. This must read peculiarly to those who know nothing of the company's career. Again, figures are given concerning the yield from investments in gold-mining over the period 1887–1932, ranging from 4.1 to 10.5 per cent. As the difference is large and turns on the amount of capital invested by the promoters of the companies, the author might have elucidated the point and perhaps offered an estimate of the amount of the vendor interests.

Condensation is unavoidable in a broad survey, however, and the book is quite essential to those interested in its subject.

EDMUND WHITTAKER

University of Illinois

Barthélemi Tardiveau: A French Trader in the West: Biographical Sketch Including Letters from B. Tardiveau to St. John de Crèvecœur (1788–1789). By HOWARD C. RICE. ("Historical Documents, Institut français de Washington," Cahier XI.) Baltimore: Johns Hopkins Press, 1938. Pp. xi+90. $2.25.

Mr. Rice offers a competent and very well-written sketch of a man who, as he admits, was a minor figure, but nevertheless an interesting

one in the history of the West in that transitional period between the fall of British authority and the firm establishment of that of the United States. His interest centers especially around a series of thirteen letters written by Tardiveau to St. John de Crèvecœur between February, 1788, and October, 1789, which he offers both in English translation and in the original French. In Mr. Rice's sketch, in the large, Tardiveau stands out before us: probably born in Nantes about 1750, a trader in the revolutionary West, supplying Clark's troops, a confidential and trusted informant of the French representatives in America, an advocate of the inhabitants of the Illinois with the Congress of the Confederation, an unsuccessful land speculator, and, finally, a resident of Spanish Louisiana at his death in 1801. The book is well endowed with contemporary views, maps, and facsimiles. Mr. Rice would doubtless be the first to admit that Tardiveau's life represented not much more than a footnote in Western history, but he has done that footnote interestingly and well.

THEODORE C. PEASE

University of Illinois

BOOKS RECEIVED

Abram, Charles. *Revolution in Land.* (New York: Harper & Bros., 1939.) Pp. xiv+320.

Åkerman, Johan. *Ekonomisk teori*, Vol. I: *De ekonomiska kalkylerna.* (Lund: C. W. K. Gleerup, 1939.) Pp. 286.

Baker, John Calhoun. *Executive Compensation Practices of Retail Companies, 1928–1937.* "Business Research Studies," No. 23. (Boston: Bureau of Business Research, Harvard University Graduate School of Business Administration, 1939.) Pp. vi+50.

Baker, O. E.; Borsodi, Ralph; and Wilson, M. L. *Agriculture in Modern Life.* (New York: Harper & Bros., 1939.) Pp. vii+303.

Barnwell, Mildred Gwin. *Faces We See.* (Gastonia, N.C.: Southern Combed Yarn Spinners' Assoc., 1939.) Pp. 112.

Bidwell, Percy W. *The Invisible Tariff: A Study of Control of Imports into the United States.* (Prepared under the auspices of the American Co-ordinating Committee for International Studies.) (New York: Council on Foreign Relations, 1939.) Pp. ix+286.

Blair, John M. *Seeds of Destruction: A Study in the Functional Weaknesses of Capitalism.* (New York: Covici, Friede, Inc., 1938.) Pp. xix+410.

Blumer, Herbert. *Critiques of Research in the Social Sciences*, Vol. I: *An Appraisal of Thomas and Znaniecki's "The Polish Peasant in Europe and America."* (With statements by William I. Thomas and Florian Znaniecki, a panel discussion, and summary and analysis by Read Bain.) (New York: Social Science Research Council, 1939.) Pp. xvii+210.

British War Blue Book, The: Documents concerning German-Polish Relations and the Outbreak of Hostilities between Great Britain and Germany on September 3, 1939. "Miscellaneous Report," No. 9 (1939). Presented by the Secretary of State for Foreign Affairs to Parliament by Command of His Majesty. (New York: Farrar & Rinehart, 1939.) Pp. xxxiv+251.

Catlin, George. *The Story of the Political Philosophers.* (New York: McGraw-Hill Book Co., Inc., 1939.) Pp. xvii+802.

Croxton, Frederick E., and Cowden, Dudley J. *Applied General Statistics.* (New York: Prentice-Hall, Inc., 1939.) Pp. xviii+944+xiii.

Danielian, N. R. *A.T. & T.: The Story of Industrial Conquest.* (New York: Vanguard Press, 1939.) Pp. 460.

Dickens, Albert E. *The Growth and Structure of Real Property Uses in Indianapolis.* "Indiana Business Studies," No. 17. (Bloomington: School of Business, Indiana University, 1939.) Pp. 64.

Ellis, L. Ethan. *Reciprocity, 1911: A Study in Canadian-American Relations.* (New Haven: Yale University Press [for the Carnegie Endowment for International Peace, Division of Economics and History], 1939.) Pp. x+207.

Gantenbein, James W. *Financial Questions in United States Foreign Policy.* (New York: Columbia University Press, 1939.) Pp. xiv+264.

Gilbert, J. C. *A History of Investment Trusts in Dundee, 1873–1938.* (London: P. S. King & Son, Ltd., 1939.) Pp. vii+144.

Gottschalk, Louis. *Lady-in-Waiting: The Romance of Lafayette and Aglaé de Hunolstein.* (Baltimore: Johns Hopkins Press, 1939.) Pp. xi+137.

Graham, Frank D., and Whittlesey, Charles R. *Golden Avalanche.* (Princeton: Princeton University Press, 1939.) Pp. xv+233.

Grant, Margaret. *Old-Age Security: Social and Financial Trends: A Report Prepared for the Committee on Social Security.* (Washington: Committee on Social Security, Social Science Research Council, 1939.) Pp. xiii+261.

Gras, N. S. B., and Larson, Henrietta M. *Casebook in American Business*

History. (New York: F. S. Crofts & Co., 1939.) Pp. viii+765.

Gregory, Homer E., and Barnes, Kathleen. *North Pacific Fisheries: With Special Reference to Alaska Salmon.* "Studies of the Pacific," No. 3. (New York: American Council, Institute of Pacific Relations, 1939.) Pp. xviii+322.

Greidanus, Tjardus. *The Development of Keynes' Economic Theories.* (London: P. S. King & Son, Ltd., 1939.) Pp. v+40.

Guillebaud, C. W. *The Economic Recovery of Germany: From 1933 to the Incorporation of Austria in March, 1938.* (London and New York: Macmillan Co., 1939.) Pp. xiv+303.

Haberler, Gottfried von. *Prosperity and Depression: A Theoretical Analysis of Cyclical Movements.* (New rev. and enlarged ed.) (Geneva: Economic Intelligence Service, League of Nations [New York: Columbia University Press], 1939.) Pp. xix+473.

Hall, James K. *A Study of Probated Estates in Washington with Reference to the State Tax System.* "University of Washington Publications in the Social Sciences," Vol. XI, No. 1. (Seattle: University of Washington, 1939.) Pp. vi+56.

Handsaker, Morrison. *The Chicago Cleaning and Dyeing Industry: A Case Study in "Controlled" Competition.* (Ph.D. dissertation, University of Chicago.) (Chicago: Privately printed, distributed by University of Chicago Librairies, 1939.) Pp. iv+66.

Harlow, Vincent. *The Character of British Imperialism: Public Inaugural Lecture Delivered at King's College, University of London, on March 1st, 1939.* (New York: Longmans, Green & Co., 1939.) Pp. 38.

Hazard, John N. *Soviet Housing Law.* (New Haven: Yale University Press, 1939.) Pp. iv+178.

Helms, Lloyd Alvin. *The Contributions of Lord Overstone to the Theory of Currency and Banking.* "Illinois Studies in the Social Sciences," Vol. XXIV, No. 4. (Urbana: University of Illinois Press, 1939.) Pp. 142.

Hirsch, Max. *Democracy versus Socialism: A Critical Examination of Socialism as a Remedy for Social Injustice and an Exposition of the Single Tax Doctrine.* (3d ed.) (New York: Henry George School of Social Science, 1939.) Pp. xxx+468.

Hobbs, Clarence W. *Workmen's Compensation Insurance: Including Employers' Liability Insurance.* (2d ed.) (New York: McGraw-Hill Book Co., Inc., 1939.) Pp. xviii+707.

Hower, Ralph M. *The History of an Advertising Agency: N. W. Ayer & Son at Work, 1869–1939.* "Harvard Studies in Business History," No. 5. (Cambridge: Harvard University Press, 1939.) Pp. xxxv+652.

Hulen, Bertram D. *Inside the Department of State.* (New York: McGraw-Hill Book Co., Inc., 1939.) Pp. xiii+328.

International Chamber of Commerce. *Copenhagen Congress, 1939, Documents,* Nos. 1–13. (Paris, 1939.)

Jennings, Henrietta Cooper. *The Consumer in Commercial Banking.* (New York: Consumer Credit Institute of America, Inc., 1939.) Pp. xvii+158.

Jerome, Edward. *The Problem of the Constitution.* (New York: Longmans, Green & Co., 1939.) Pp. ix+224.

Johnson, G. Griffith, Jr. *The Treasury and Monetary Policy, 1933–1938.* "Harvard Political Studies." (Cambridge: Harvard University Press, 1939.) Pp. 230.

Knappen, Laurence S. *Revenue Bonds and the Investor.* (New York: Prentice-Hall, Inc., 1939.) Pp. xiii+329.

League of Nations, Economic Intelligence Service. *Review of World Trade, 1938.* (Geneva [New York: Columbia University Press], 1939.) Pp. 85.

League of Nations, Economic Intelligence Service. *Statistical Year-Book of the League of Nations, 1938–39.* (Geneva [New York: Columbia University Press], 1939.) Pp. 330.

Leiserson, William M. *Labor's Right To Organize.* (Minneapolis: University of Minnesota Press, 1939.) Pp. 23.

Lenin, V. I. *Theory of the Agrarian Question,* Vol. XII of *Selected Works.* (New York: International Publishers, 1938 [1939].) Pp. xi+335.

Lester, Richard A. *Monetary Experiments: Early American and Recent Scandinavian.* (Princeton: Princeton University Press, 1939.) Pp. xvii+316.

Lester, Richard A., and Kidd, Charles V. *The Case against Experience Rating in Unemployment Compensation.* "Industrial Relations Monographs," No. 2. (New York: Industrial Relations Counselors, Inc., 1939.) Pp. 60.

MacIver, R. M. *Leviathan and the People.* (University: Louisiana State University Press, 1939.) Pp. ix+182.

McClintock, Franklin T. *Competitive Bidding for New Issues of Securities.* (New York: Harriman Ripley & Co., Inc. [63 Wall St.], 1939.) Pp. 73.

McMullen, Stewart Yarwood. *Federal Income Tax Accounting: A Practical Course for Basic Instruction.* (New York: Ronald Press Co., 1939.) Pp. xvii+315.

Meyers, Albert L. *Modern Economic Problems.* (New York: Prentice-Hall, Inc., 1939.) Pp. xiv+311.

Minoletti, Bruno. *I Porti franchi.* (Turin: Giulio Einaudi, 1939.) Pp. 199.

National Labor Relations Board, Division of Economic Research. *Collective Bargaining in the Newspaper Industry: A Study of Newswriters' Organizations and Representative Unions in the Mechanical Trades and an Analysis of the Effects upon Interstate Commerce of Industrial Conflict within the Industry.* Bull. 3. (Washington, 1939.) Pp. x+194.

Nugent, Rolf. *Consumer Credit and Economic Stability.* (New York: Russell Sage Foundation, 1939.) Pp. 420.

Pick, Alfred John. *The Administration of Paris and Montreal: A Comparative Study.* "Guy Drummond Publications." (Montreal: Guy Drummond Fellowship Fund, McGill University, 1939.) Pp. 201.

Poole, Kenyon E. *German Financial Policies, 1932–1939.* "Harvard Economic Studies," Vol. LXVI. (Cambridge: Harvard University Press, 1939.) Pp. xiv+276.

Radice, E. A. *Savings in Great Britain, 1922–1935: An Analysis of the Causes of Variations in Savings.* "Oxford Studies in Economics." (New York: Oxford University Press, 1939.) Pp. 146.

Robinson, Herbert W. *The Economics of Building.* (London: P. S. King & Son, Ltd., 1939.) Pp. xii+162.

Roethlisberger, F. J., and Dickson, William J., with the assistance and collaboration of Harold A. Wright. *Management and the Worker: An Account of a Research Program Conducted by the Western Electric Company, Hawthorne Works, Chicago.* (Cambridge: Harvard University Press, 1939.) Pp. xxiv+615.

Sarkar, Benoy Kumar. *The Sociology of Races, Cultures and Human Progress: Studies in the Relations between Asia and Eur-America.* (Calcutta: Chuckervertty, Chatterjee & Co., Ltd., 1939.) Pp. x+399.

Senior, Clarence. *Mexico in Transition.* "L.I.D. Pamphlet Series." (New York: League for Industrial Democracy, 1939.) Pp. 54.

Sims, Newell LeRoy. *The Problem of Social Change.* (New York: Thomas Y. Crowell Co., 1939.) Pp. viii+477.

Sivaswamy, K. G. *Legislative Protection and Relief of Agriculturist Debtors in India.* "Gokhale Institute of Politics and Economics," Pub. No. 6. (Poona: Gokhale Institute of Politics and Economics, Servants of India Society's Home, 1939.) Pp. xviii+390.

Spencer, William Homer. *Casebook of Law and Business.* (New York: McGraw-Hill Book Co., Inc., 1939.) Pp. xvi+1179.

Stokes, Milton L. *The Bank of Canada: The Development and Present Position of Central Banking in Canada.* (Toronto: Macmillan Co. of Canada, Ltd., 1939.) Pp. xii+382.

Strayer, Paul J. *The Taxation of Small Incomes: Social, Revenue, and Administrative Aspects.* (New York: Ronald Press Co., 1939.) Pp. viii+210.

Taussig, F. W. *Principles of Economics,* Vol. II. (4th ed.) (New York: Macmillan Co., 1939.) Pp. xvii+595.

Thomas, P. J. *The Growth of Federal Finance in India: Being a Survey of India's Public Finances from 1833 to 1939.* (New York: Oxford University Press, 1939.) Pp. xi+558.

Thompson, James Westfall; Palm, Franklin Charles; and Van Nostrand, John J. *European Civilization: A Political, Social and Cultural History.*

(New York: D. Van Nostrand Co., Inc., 1939.) Pp. xii+1297.

Thornton, Willis. *The Third Term Issue: Hot Potato of American Politics.* (New York: Greenberg, Publisher, Inc., 1939.) Pp. 119.

Twentieth Century Fund, Inc. *Does Distribution Cost Too Much? A Review of the Costs Involved in Current Marketing Methods and a Program for Improvement. The Factual Findings* by Paul W. Stewart and J. Frederic Dewhurst, with the assistance of Louise Field; and *The Program* by the Committee on Distribution. (New York, 1939.) Pp. xvii+403.

United States Department of Commerce, Bureau of Foreign and Domestic Commerce. *Transport Control Abroad: Recent Outstanding Measures, Trends and Developments.* By W. Rodney Long. "Trade Promotion Series," No. 196. (Washington: Government Printing Office, 1939.) Pp. v+427.

van der Wijk, J. *Inkomens- en Vermogens-Verdeling* ("Distribution of Incomes and Fortunes"). (Haarlem: De Erven F. Bohn N.V., 1939.) Pp. xv+295.

van Gelderen, J. *The Recent Development of Economic Foreign Policy in the Netherlands East Indies.* "Publications of the Graduate Institute of International Studies, Geneva, Switzerland," No. 20. (New York: Longmans, Green & Co., 1939.) Pp. 90.

Varga, Eugene. *Two Systems: Socialist Economy and Capitalist Economy.* Translated from the German by R. Page Arnot. (New York: International Publishers Co., Inc., 1939.) Pp. 268.

Watkins, Frederick Mundell. *The Failure of Constitutional Emergency Powers under the German Republic.* "Harvard Political Studies." (Cambridge: Harvard University Press, 1939.) Pp. 148.

Wermel, Michael T. *The Evolution of the Classical Wage Theory.* (New York: Columbia University Press, 1939.) Pp. xii+190.

Williams, J. Kerwin. *Grants-in-Aid under the Public Works Administration: A Study in Federal-State-Local Relations.* "Columbia University Studies in History, Economics and Public Law," No. 459. (New York: Columbia University Press, 1939.) Pp. 292.

Wood, Elmer. *English Theories of Central Banking Control, 1819–1858: With Some Account of Contemporary Procedure.* "Harvard Economic Studies," Vol. LXIV. (Cambridge: Harvard University Press, 1939.) Pp. xiii+250.

Works Progress Administration, National Research Project. *Employment Experience of Paterson Broad-Silk Workers, 1926–36: A Study of Intermittency of Employment in a Declining Industry.* By James E. Wood. (Report No. L-3.) (Philadelphia, 1939.) Pp. xvi+141.

Works Progress Administration, National Research Project. *Mechanization in the Brick Industry.* By Alfred J. Van Tassel and David W. Bluestone. (Report No. M-2.) (Philadelphia, 1939.) Pp. xii+83.

Works Progress Administration, National Research Project. *Production, Employment, and Productivity in 59 Manufacturing Industries, 1919–36: With an Appendix on the Electric Light and Power and Telephone Industries,* Part I: *Purpose, Methods, and Summary of Findings;* Part II: *Indexes for Individual Industries and Methods of Construction;* Part III: *Appendixes.* By Harry Magdoff, Irving H. Siegel, and Milton B. Davis. (Report No. S-1.) (Philadelphia, 1939.) Pp.: Part I, xvii+82, +72 charts; Part II, xiii+230; Part III, xv+163.

Works Progress Administration, National Research Project. *Trends in Size and Production of the Aggregate Farm Enterprise, 1909–36; Trends in Employment in Agriculture, 1909–36.* (Reports Nos. A-6 and A-8.) (Philadelphia, 1938.) Pp. xvi+163.

Wright, Fergus Chalmers. *Population and Peace: A Survey of International Opinion on Claims for Relief from Population Pressure.* "Peaceful Change [Series]," International Studies Conference. (Paris: International Institute of Intellectual Co-operation, League of Nations [New York: Columbia University Press], 1939.) Pp. xvi+373.